

The Additional PCCF (C) Eastern Zone Regional Office MoEF & CC, Govt. of India A/3, Chandrasekharpur Bhubaneswar–751 013 (Odisha) Email: roez.bsr-mef@nic.in

MD/ENV/ 319 /106 / 2021 Date: 25.11.2021

- Ref: Environmental Clearance letter no. J-11015/888/2007-IA.II (M), dated: 21.12.2011 & & its amendment dated 7<sup>th</sup> Sept.2018.
- Sub: Submission of Half-yearly compliance status report of Environmental Clearance conditions for the period April'21 September'21 in respect of Khondbond Iron & Manganese Mine, M/s Tata Steel Limited.

Dear Sir,

Kindly find attached herewith submitting the six monthly compliance report as on date of Khondbond Iron & Manganese Mine, M/s Tata Steel Limited for the period from April 2021 – September 2021 as per EIA Notification, 2006. Also the compliance for the same period vide office memorandum no. Z-11013/57/2014-IA.II (M), dated 29.10.2014, is also attached herewith as Annexure - A. The same has been mailed in soft copy to your good office on e-mail to roez.bsr-mef@nic.in for your ready reference.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavor for further improve upon our Environmental Management practices.

Thanking you,

Yours faithfully, f: M/s Tata Steel Limited

Head (Planning), OMQ

Encl.: As above

- Copy to : The Chairman, Central Pollution Control Board, Southern Conclave, Block 502, 5<sup>th</sup> & 6<sup>th</sup> Floors, 1582 Rajdanga Main Road, Kolkata 700107 (W. B.)
  - : The Member Secretary, State Pollution Control Board, Paribesh Bhawan, A/118,
  - Nilakantha Nagar, Unit VIII, Bhubaneswar 751012 (Odisha)
  - : The Regional Officer, SPCB, College Road, Baniapata, Keonjhar 758001 (Odisha)

#### TATA STEEL LIMITED

Mines Division Noamundi 833 217 India Tel 91 9234301340 Fax 91 6596 290737 Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 Tel 91 22 66658282 Fax 91 22 66657724 Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

### Point wise compliance Environmental Clearance

of

Khondbond Iron & Manganese Mine Tata Steel Ltd. EC no J-11015/888/2007. IA. II (M), dated 21<sup>st</sup> Dec. 2011 & its amendment dated 7<sup>th</sup> Sept.2018 Production: Iron 08 MTPA (ROM) & beneficiation plant 08 MTPA & Manganese Mine 0.1MTPA (ROM)

(April 2021- September 2021)

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SI No.	EC Condition	Compliance status as on date
Spe	cific Conditions	
_		Being complied with.
1.	No mining shall be carried out in the forestland without obtaining requisite prior forestry clearance under the Forest (Conservation) Act, 1980 for forestland involved in the project. The environmental clearance is subject to grant of forestry clearance.	The total project area of Khondbond is 1019.472 ha, which includes mine lease area of 978ha. Out of which the mine has obtained the Stage -II forest clearance of 453.150ha vide letter no. F. No. 8-98/2004/FC dated: 09.08.2006 (317 ha. fresh + 136.15 ha broken prior to 1980). All the mining operations are restricted within same. For the rest of area, forest diversion proposal is applied & are at advanced stage of approval.
	The project proponent shall obtain Consent to	Complied with.
2.	Establish and Consent to Operate from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.	Khondbond Iron & Manganese mine has valid Consent to Establish & Consent to Operate from State Pollution Control Board till 31.03.2026.
	The environmental clearance is co-terminus to	Noted and shall be complied.
3.	mining lease and the proponent shall obtain fresh Environmental Clearance at the time of renewal of mine lease in accordance with the provisions of the EIA Notification, 2006 as amended subsequently	Fresh EC shall be obtained at the time of next lease renewal as per EIA Notification, 2006 as amended subsequently.
4.	The mining operations shall be restricted to above ground water table in the iron ore zone and it should not intersect the ground water table. In case of working below the ground water table in the iron ore zone, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydrogeological study shall be carried out.	Noted & complied with. However, in iron mine, the lowest working depth of the mine is 654 RL which is above the ground water table 555AMSL - 553AMSL. But in manganese mine the ground water table may be breached, for which application has been made to CGWA for dewatering NOC, vide Application no. 21- 4/1458/OR/MIN/2017 dated 13/06/2020.
5.	The Company shall submit within 3 month their policy towards Corporate Environment Responsibility which should inter-alia address (i) Standard Operating process/ procedure to bring into focus any infringements/ deviation/ violation of environmental or forest norms /conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of noncompliance / violation environmental norms to the Board of Director of the company and/ or stake holders or shareholders.	Noted & complied vide letter No. MD/ENV/775 /106/2012, Dated. 20.03.2012. Tata steel Ltd. has various committee to address all the environmental issues adequately.
.6.	A safety zone of 50m shall be left as no mining zone and no waste shall be dumped within this safety zone along the side of Suna Nadi (Kundra Nallah) &	Before this condition was given, there exists an old waste dump within the 50m distance from Kundra nallah and that has been stabilized by plantation along with garland drains and Toe walls.

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Manager Environment (Khondbond)

	the Kakrapani nallah flowing adjacent to the mine lease area.	However, at present no mining activity is being carried out within the safety zone of 50m along the side of Kundra nallah.
7.	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the first order and the second order streams, if any emanating from the mine lease area during the course of mining operation.	Complied with. No natural watercourse or water resources are obstructed due to our mining operations. Further, no first order and the second order streams are emanating from the mine lease area.
8.	The top Soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	
9.	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without effecting flow of ore in the ore processing and handling areas.	Noted and complied. All the mineral handling plant has been equipped with dust suppression system.
10.	The effluent from the ore beneficiation plant shall be treated in the tailing thickener and the tailings slurry	Noted and complied.

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	shall be transported through a closed pipeline to the	
	tailing ponds.	The effluent from the ore beneficiation plant is first sent to thickener where the excess water is recovered and re circulated into the plant for processing purpose and the remaining slurry with tailing is then sent to the tailing dam through closed pipeline.
		Noted and complied.
11.	The tailing ponds shall be lined HDPE lining.	HDPE liners have been installed in the slime Dam.
12.	The decanted water from the tailing dam shall be re- circulated and there should be zero discharge from the tailing dam.	Noted and complied. The decanted water from the tailing dam is recovered and re- circulated in the processing plant.
13.	Appropriate technology shall be used for maximum recovery of ore in order to reduce slurry discharge and to increase the life of the tailing ponds	Noted & shall be complied. Construction of paste thickener is under process. Once completed it will reduce the slurry discharge in the tailing dam and increase the life of the tailing ponds.
14.	The project proponent shall constitute on emergency management Team under the control of project in charge to deal with the emergency situation pertaining to the tailing pond for the timely & effective control of emergency situation, it shall be ensured that training programme and mock drill shall be organised for the employees	Noted & complied. Emergency management team which consist of security personnel's do continuous patrolling of the area for observation of any emergency pertaining to the tailing ponds. Also mock drills are organised for the employees for control of emergency situation in regard with tailing dam.
15.	The Over burden (OB) generated during the mining operations shall be stacked at earmarked dump site (s) only and it should not be kept active for a long period of time and its phase-wise stabilisation shall be carried out. Backfilling shall commence from the fifth year onwards. There shall be six over burden (four for iron and two for manganese ore). proper terracing of the OB dumps shall be carried out so that the overall slope of the dumps shall be maintained to 28°. The overburden dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Out of the total excavated area of 763.665ha, an area of 758.665ha shall be reclaimed and afforested. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self- sustaining. Compliance status shall be submitted to the Ministry of Environment & Forest and its regional office located at Bhubaneswar on six monthly basis.	Currently all Over burden (OB) is been handled as per approved mine plan. The land use and land cover shall be abided which includes the earmarked storage of OB. OB dumps are scientifically being vegetated with suitable native species.
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Coir matting on fine stock Catch drains, siltation ponds are made along with toe wall 16. Catch drains and siltation ponds of appropriate size should be constructed around the tailing ponds, and garland drains in and around mine dumps areas to mine working, soil, OB and mineral dump(s) to prevent surface runoff. prevent run off of water and flow of sediments directly into the Suna Nadi (Kundra Nalla), the Jalpa Nadi, the Baitarni River, the Karo Nadi, the kakrapani nalla, the kundru nalla, the Dalko nalla, the kashi nalla, Tapodihi nalla, the Teherei nalla, the the Achanda nalla and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the tailing ponds, mine pit, soil, OB and mineral Siltation pond and catch drains in iron mines area dump(s)to prevent run off of water and flow of sediments directly into the Suna Nadi (Kundra A series of check dams and siltation's ponds are also made in Nalla), the Jalpa Nadi, the Baitarni River, the Karo manganese area Nadi, the kakrapani nalla, the kundru nalla, the Dalko nalla, the kashi nalla, the Tapodihi nalla, the Teherei nalla, the Achanda nalla and other water bodies and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at Siltation pond and catch drains in manganese mines area the corners of the garland drains and desilted at regular intervals. All the retaining walls at the toe of OB dumps are made adequately. All the siltation ponds and garland drains are made based on rainfall data for adequate surface runoff management. Dimension of retaining wall at the toe of the OB 17. dumps and benches within the mine to check runoff and siltation should be based on the rainfall data.

Retaining wall in Khondbond mines area

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18.	The void left unfilled in an area of 5ha shall be converted into water body. The higher benches of excavated void/ mining pit shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	Noted and shall be complied at end of mine life. This being the activity at the end of mine life is been incorporated in progressive mine closure plan.
19.	Plantation shall be raised in an area of 965.018 ha including a 7.5 wide green belt in the safety zone around the mining lease by planting the native species around reclaimed area, mine benches, water body, tailing ponds, along the roads etc. In consultation with the local DFO/Agriculture Department. The density of the tree should be around 2500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Noted and being complied.
20.	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer point. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	<text><text><image/><image/><image/><image/></text></text>
21.	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	Noted & complied. Regular monitoring of Kundra Nallah is being out and records are maintained.
22.	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Noted & complied. For the ground water augmentation Hydrogeology study has been conducted and it has been submitted to CGWB. As per the study four ponds and four number of recharge pit have been successfully constructed.

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			Ground	Image: Second	pond	
23.	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The periodic monitoring (at least four times in a year – pre- monsoon (April/May), monsoon (August), post- monsoon (November) and winter (January) once in in each season) shall be carried out in consultation with the State Ground Water Board/ Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	frequency	ground water		uality as per o	
24.	The ground water quality around the tailing pond shall be monitored regularly and time series data generated. It shall be ensured that the groundwater quality is not affected adversely due to the project.	Noted and	d complied.			
25.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water required for the project.	The mine	division vide let		wl permission fro dated:	om water
26.	Appropriate mitigative measures should be taken to prevent pollution of the Baitarni River, the Suna Nadi & the Karo Nadi in consultation with State Pollution Control Board.	mitigative drains, ch	t pollution of su measures are eck dams, sett	taken such a ling pits etc.	vers during rains s toe wall, garla	nd
27.	The Project proponent shall practise suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rain water harvesting in consultation with the Central Ground Water Authority and submit a copy of the same to	Ground V after conc	Vater Recharge ducting a hydro r recharge pote <b>RWH</b> structure Ground	e structures I geology stud	Ponds and Two have been cons y. RWH structures Recharge Quantity(m <sup>3</sup> ) 66000	tructed
	the MoEFCC & its Regional Office; Bhubaneswar.	2.	Water Recharge structures. Recharge Well	2 Total	34560	-
28.	Vehicular emission shall be kept under control and regular monitored. Measures shall be taken for	Noted & c	omplied.			

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	maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded	Emission checks for all the vehicles are carried out once in every six months. Effective water sprinkling is done on haul roads to control fugitive dust. Moreover, outside transportation of mineral is carried out through covered trucks. Further, overloading of trucks is restricted to prevent spillage of material.
29.		Transportation of ore is being made as per District Collector, Keonjhar, order.
30.	No blasting shall be carried out after sunset. Blasting operation shall be carried only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting is being carried out during day time only. Controlled Blasting is being carried out for control of ground vibrations and to arrest fly rocks, as per the recommendations of CIMFR, Dhanbad.
31.	Drills shall either be operated with Dust extractors or equipped with water injection system.	Wet drilling is in practice. Drills have been provided with dust suppression system.
32.	Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Were channingThe Mineral Handling plant has been equipped with dry fogsystem along with closed conveyor at all loading andunloading points including transfer points.Image: Image: Imag
33.	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	Sewage Treatment Plant (STP) of 10 KLD installed & operational in mine area for the treatment of waste water generated. Khondbond doesn't have any separate colony. Mine and for waste water from workshop, oil and grease separation pits are provided. ETP shall be construed as per requirement.

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		<image/> <caption><caption><image/></caption></caption>
34.	During operation of the project, special emphasis shall be given to minimise risks and hazards due to manganese poisoning.	Noted and shall be complied.
35.	Pre-placement of medical examination and periodical examination of the workers engaged in the project shall be carried out and record maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Complied Pre-placement medical examination and periodical examination of the workers engaged are being conducted & record maintained. The schedule of Periodical Medical Examination is once in every 3 years for the employees of age more than 40 years and once in 5 years for the employees of age less than 40 years.
36.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Noted & complied. During construction of project work at Khondbond local labours are engaged, which are from nearby villages. Thus, residential facility is not required. However, various amenities such as canteens for food, a safe drinking water facility, toilets, medical facility with site medical officer etc are provided. A sewage treatment plant of 10KLD is also operational in area.
37.	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Noted & complied. Digital processing of the entire lease area was carried by high resolution satellite imagery. And M/s Geo Consultants Pvt. Ltd., (Authorized organisation of ORSAC) was engaged for the work. Land use and land cover of the core and buffer zone is attached. <b>Annexure-II</b>
38.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely sloth bear, elephant, godhi etc. spotted in the study area. The critical habitats if any within the impact zone shall be individually identified and the conservation	Noted & complied. Khondbond is an operational mining area of Tata Steel and various precautionary measures are ken for conservation and protection of endangered flora and fauna.

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	plan prepared specific to this project in consolation with the state forest and wildlife deptt. Should effectively address the same. All the safeguard measures brought out in the wildlife conservation plan prepared specific to this project site shall be effectively implemented in consolation with the state forest and wildlife deptt. A copy of approved wildlife conservation plan shall be submitted to the Ministry & its Regional office, Bhubaneswar within three months.	The mine has approved wildlife management 843/1 WLSSP- 100/2016; dated 28 <sup>th</sup> January 2016 and various measures are taken with state forest and wildlife department as on when required. The approved copy of wildlife management plan is already submitted to Ministry & its Regional office, Bhubaneswar.
39.	The entire mining lease area shall be fenced by erecting solar power electric fencing all around it. The fencing so erected shall be maintained properly and the cost towards erection and maintenance of the solar power electric fencing shall be borne by the project proponent out of the project cost.	Noted & being complied. The Khondbond mine lease comprises of 874.198 ha of forest land including Sabik forest. Area having surface right and forest clearance are being fenced with solar electric fence. Lease boundary of 4 km length has been successfully fenced.
40.	The critical parameters such as RSPM (Particulate matter with size less than 10 miocron i.e., PM10 ) and NOx in the ambient Air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored (TDS, DO,PH, and total suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the company in public domain. The circular No. J20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	Solar fencing around lease boundary Noted & complied. The critical parameters like RSPM & NOx in ambient air are being monitored regularly and all the results are within the limits. Peak particle velocity at the time of blasting is also monitored regularly at 300m distance. Quality of discharged water (TDS, DO, PH, and total suspended Solids (TSS)) is also being monitored and all the results are within the limits. All the environmental monitoring data is being uploaded on the Company's website as part of this report and also displayed on a display board at the main entrance gate of the mine

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	Display of environmental information in public domain
41.	A progressive mine closure plan approved by IBM is in place. The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests 5 years in advance.

SI No.	EC Condition	Compliance status as on date
Gen	eral Conditions	
1.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	We are operating as per the approved mining technology and scope of working mentioned in Environmental Clearance granted to us and no change in mining technology and scope of working shall been made and adhered to the condition of MoEF&CC.
2.	No further expansion or modification in the plant shall be carried out without prior approval of the MoEF&CC.	For any expansion or modification in future prior approval shall be sought from MoEF&CC.
3.	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	Calendar plan (IBM Approved Mining Plan) prepared for the mine is being strictly adhered to and we are well within the limits specified in Mining Plan as well as EC and CTO granted capacity.
4.	At least four ambient air quality-monitoring stations should be established in the core Zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e. PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Noted & complied. Ambient Air Quality monitoring is regularly carried out at four different stations within the core & buffer zone. Two continuous ambient air quality monitoring stations with $PM_{10} \& PM_{2.5}$ , CO, SO <sub>2</sub> and NO <sub>x</sub> are installed in core zone and one at buffer zone.

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		Continuous ambient air quality monitoring stations in Khondbond Ambient air quality report is attached as Annexure-III for reference.
5.	Data on ambient air quality [(RSPM (particulate matter with size less than 10 micron i.e. PM10) and NOx] should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	RSPM (Particulate matter with size less than 10micron i.e, PM10) and, NOx in ambient air are being monitored as per standard guidelines and the reports are submitted to Regional office, MoEF&CC, Bhubaneswar on half yearly basis and SPCB, Odisha on monthly basis.
6.	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Fugitive dust emissions from all the sources are controlled regularly. Effective water sprinkling is being done on haul roads, loading and unloading and at transfer points Dry fog system is being used in plant areas to avoid generation of fugitive dust.
7.	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc should be provided with ear plugs/muffs.	Regular noise monitoring is done at different work areas. High noise areas are earmarked and people working there are provided with ear protection equipment and the system is ensured by certification to ISO 45001 and regular field audits.
8.	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the Standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Oil & Grease separation pits have been provided to take care of effluents from the workshop. The same water quality is monitored regularly, and the parameters meet the prescribed standard. There is no waste water generation from the mines.
9.	Personnel Working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Adequate dust masks are provided to employees engaged in dusty areas. It is also ensured that they use the same. Respirable dust survey at different locations is done regularly. The employees are also given regular awareness training on safety and health aspects as part of implementation process of ISO 45001 systems. Further, employees undergo Lung Function Tests during the Periodical Medical Examination. Periodical Medical Examination of employees and contractor workers are organised regularly to observe any contractions due to exposure to dust and other occupational hazards.
10.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive who will report directly to the Head of the Organization.	A separate environmental management cell is in place with the people having relevant qualification on environmental science. The Head of the environment department reports to General Manager i.e. the head of the organization.
11.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose. During the year FY22 an amount Rs. 568.8 lakhs (approx) has been allocated for environment protection and it is being spent towards environmental

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		protection measures at Khondbond Mine and details are attached as <b>Annexure-IV</b> .
12.	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closing and final approval of the project by the concerned authorities and the date of start of land development work.	This is a running mine. No specific date of start of land development work can be assigned. However, the copy of the Environmental Clearance has been sent to the Regional Office, MoEF&CC, Bhubaneswar for kind information.
13.	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the Officer (s) of the Regional office by furnishing the requisite data / information / monitoring reports.	We extend full co-operation to the officers of the Regional Office during their visit and furnish the required data, information and monitoring reports.
14.	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent	Six monthly reports are submitted regularly on the status of implementation of the stipulated environmental safeguards to the Regional Office, MoEF&CC, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. Further, the six monthly compliance report along with the monitoring results are uploaded in Tata Steel's website and updated periodically.

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### Point wise compliance Environmental Clearance Amendment of Khondbond Iron & Manganese Mine Tata Steel Ltd.

EC no: J-11015/888/2007.IA.II (M), its amendment dated 7<sup>th</sup> Sept.2018 Production: Iron 08 MTPA (ROM) & beneficiation plant 08 MTPA & Manganese Mine 0.1MTPA (ROM)

SI No.	EC Condition	Compliance status as on date
Specific	Conditions	
1.	The Environmental Clearance will not be operational till such time the project proponent complies with all the statutory requirements and judgement of Hon'ble Supreme Court dated the 2 <sup>nd</sup> August 2017 in Writ Petition(Civil)No.114 of 2014 in the matter of common cause verses Union of India and Ors.	Noted and being complied The unit is committed for the statutory compliance of all the requirements and judgement of Hon'ble Supreme Court dated the 2 <sup>nd</sup> August 2017 in Writ Petition (Civil)No.114 of 2014 in the matter of common cause verses Union of India and Others.
2.	Department of Mining & Geology state govt shall ensure that mining operation shall not commence till the entire compensation levied, for illegal mining paid by the project proponent through their respective department of mining geology in strict compliance of judgement of Hon'ble Supreme Court dated the 2 <sup>nd</sup> August 2017 in Writ petition(Civil) No. 114 of 2014 in the matter of common cause versus union of India and Ors.	Noted.
3.	Monitoring of ambient air quality to be carried out based on the 2009 notification, as amended from time to time by the central pollution control board	Noted & complied.
4.	The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain PUC certificate for all the vehicles from authorized pollution testing centre; washing of all transport vehicle should be done inside the mining lease.	Complied. The transportation of ore is done with compliance to all the conditions stated in order to prevent pollution. Regular sprinkling is done.

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5.	The activities and budget earmarked for Environmental Responsibility (CER) shall be as per Ministry's O.M No. 22-65/2017-IA.II(M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted to the Regional Office of the Ministry and State Pollution Control Board.	Khondbond mine has Environment Clearance for a production capacity of 8 MTPA Iron ore & 0.1 MTPA Mn ore obtained vide letter no. J-11015/888/2007-IA-II (M), dated 21.12.2011. The mine was granted an amendment in EC w.r.t Run of Mine (ROM) on 07.09.2018. This amendment was necessitated for consideration of new definition of ROM as per notified Mineral (Other than Atomic and Hydrocarbons Energy Minerals) Concession Rules 2016. There was no proposal for production enhancement or modernization or change in technology therefore no capital expenditure was involved. As per the Ministry's O.M No 22-65/2017-IA. II (M) dated 01.05.2018, CER cost is a percentage of capital cost. Whereas for the EC granted on 07.09.2018, no capital expenditure was involved. Therefore, we had not considered any CER budget cost post grant of the EC dated 07.09.2018. Further as per Ministry's O.M No 22-65/2017-IA. II (M) dated 30.09.2020, the allocation of funds under CER is no more applicable. We wish to state here that the mine has been implementing the various EMP measures and developmental activities under CSR heads on a regular basis.
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Manager Environment (Khondbond)

#### Point wise compliance of

Impact of mining activities on Habitations -Issues related to the mining projects wherein Habitations and villages are the part of the mine lease areas or habitations and villages are surrounded by the mine lease area – regarding by Khondbond Iron & Manganese Mine Tata Steel Ltd.

Circular no : Z-11013/57/2014-IA.II(M), dated 29<sup>th</sup> October, 2014 As per letter no. 106-9/11/EPE, dated 2<sup>nd</sup> Dec., 2014 of Dr. S Kerketta, Scientist E, MoEF&CC, BBSR

SI	EC Condition	Compliance status as on date
No.		Compliance status as on date
Speci	fic Conditions	
А.	The Project Authority shall adopt Best mining practice for the given mining conditions. In the mining area, adequate number of check dams, retaining walls/structures, garland drains and settling ponds should be provided to arrest the wash – off with rain water in catchment area.	Noted & being complied Adequate number of check dams, retaining walls/structures, garland drains and settling ponds have been constructed to arrest the wash – off with rain water from the mine lease.
		Noted & complied
В.	The natural water bodies and or streams which are flowing in and around the village should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Authorities have to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well located in village should be incorporated to ascertain the impact of mining over ground water table.	Regular monitoring of water table is done by both manual and digital Piezometers.Image: Straight of the
		Piezometer (STP) with digital recorder
		Piezometers installed at Khondbond
C.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right to darkness and minimal noise levels at night. The Project Proponents (PPs) must ensure that the biological clock of the villagers is not disturbed by orienting the floodlights/ masks away	Noted & complied Noise level monitoring is carried out regularly which is well within the prescribed limit. Annexure VI

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Manager Environment (Khondbond)

SI No.	EC Condition	Compliance status as on date
Speci	fic Conditions	·
	from the noise levels well within the prescribed limit's for day/night hours.	
D.	The Project Authority shall make necessary alternative arrangements, where required, in consultation with the State Government to provide alternate areas for livestock grazing. In this context, Project Authority should implement the directions of the Hon'ble Supreme Court with regard to acquiring grazing land. The sparse trees on such grazing ground, which provide mid- which provide mid – day shelter from the scorching sun should be scrupulously guarded against felling lest the cattle abandon the grazing ground or return home by noon.	Noted & is complied
E.	Where ever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching any such habitats or other buildings to evaluate the Zone of influence and impact of blasting on the neighbourhood. Within 500 meters of such sites vulnerable to blasting vibrations, avoidance of use of explosives and adoption of alternative means of mineral extraction, such as ripper/dozer combination/rock breakers/ surface miners etc. should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that the impact of blasting on nearly habitation and dwelling units could be ascertained, The covenant of lease deed under Rule 31 of MCR 1960 provides that no mining operations shall be carried out within 50 meters of public works such as public roads and buildings of inhabited sites except with in prior permission from the Competent Authority.	Noted & complied
F.	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. Crusher and material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt- conveyors should be fully covered to avoid air borne dust.	Noted & is compliedThe main haulage road is provided with permanent water sprinklers. However, for adequate dust suppression mobile water sprinklers are also used.Image: sprinkler in the sprinkle in the sprinkl

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SI No.	EC Condition	Compliance status as on date
	fic Conditions	1
		To avoid fugitive dust, all dust generated points are adequately addressed by providing dry fog system, mist cannon. The mineral processing plant is under construction and at crushing & screen circuit bag filters also been provided.
G.	The Project Authority shall ensure that the productivity of agricultural crops is not affected due to mining operations. Crop Liability Insurance Policy has to be taken by the PP as a precaution to compensate for any crop loss. The impact zone shall be 5km from the boundary of mine lease-area for such insurance policy. In case, several mines are located in a cluster, the Associations of owners of the cluster mines, formed inter-alia, to sub-serve such an objective, shall take responsibility for securing such drop Liability Policy.	Not Applicable
H.	In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert. Appraisal Committee (EAC) should consider the proposal of Environmental Clearance (EC) for reduced mining area. The Mining lease may be executed for the area for which EC is accorded. The mining plan may also be accordingly revised and required stipulations under the MMDR Act, 1957 rind MCR, 1960 met.	Noted
I.	Transportation of the minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.	Noted & complied
J.	Likewise, alteration or re-routing of foot paths, pagdandies, cart roads, and village infrastructure/public utilities or roads (for purposes of land acquisition for mining) shall be avoided to the extent possible and in case such acquisition is inevitable, alternative arrangements shall be made first and then only the area acquired. In these types of cases, Inspection Reports by site visit by experts may be insisted upon which should be done through reputed Institutes.	Noted & complied
K.	As CSR activities by Companies including the Mining Establishments has become mandatory up to 2% of their	Noted & complied

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Manager Environment (Khondbond)

SI No.	EC Condition	Compliance status as on date
Speci	fic Conditions	
	financial turn-over, Socio Economic Development. of the neighbourhood Habitats could also be planned and executed by the PPs more systematically based on the 'Need based door to door survey' by established Social Institutes/Workers on the lines as required under TOR. "R&R Plan/compensation details for the Project affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SC's /ST's and other weaker sections of the society in the study area, a need based sample survey, family wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village located in the mine lease area will be shifted or not. The issues related to shifting of village including their R&R and socio-economic aspects should be discussed in the EIA Report."	

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**TEST REPORT** 

# **Ground Water Level** Khondbond Iron & Manganese Mine (April 2021 – September 2021)



22	4	ິພ	Ν	-	No.				
Chemist	OMC Colony	Khondbond Village	Guruda Village	Ganua Village	Village Name	, · · ·	ж л		
Chemist:-Snyl.	20/03/2021	20/03/2021	20/03/2021	20/03/2021	. Date of Measurement	M/s		Ĭ	
	Dugwell near road	Dugwell in field (Mr. Mothua Munda)	<b>Dugwell near Club</b>	Dugwell near road (Mr. Keshar Patra)	Details of location	Khondbond I (M/s TAT District State - O <u>Ground Wa</u> t			
n Ga	6.47	5.91	4.73	6.18	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	M/s Khondbond Iron & Manganese Mine (M/s TATA Steel Limited) District - Kendujnar, State - Odisha-758 034. <u>Ground Water Table Measurement</u> <u>April-2021</u>			
Autho	0.50	0.70	0.65	0.53	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Mine <u>nent</u>			
Shaw-f Authorized Signatory	5.97	. 5.21	4.08	5.65	Water level Below Ground Level in Mtrs. = mbmp - mag		•	ANAC	

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Recognized By Ministry of Environment & Forests (MoEF), New Delhi
Approved by : Food Safety & Standards Authority of India under FSS Act;
Bureau of Indian Standards (BIS); Agricultural & Processed Food Products Export Development Authority (APEDA);
Export inspection council (EIC); AGMARK.

	4	ω	2	1	S1. No.		
Chemist:SDV	OMC Colony	Khondbond Village	Guruda Village	Ganua Village	Village Name		
75	18/06/2021	18/06/2021	18/06/2021	18/06/2021	Date of Measurement	M/s ]	
	Dugwell near road	Dugwell in field (Mr. Mothua Munda)	Dugwell near Club	Dugwell near road (Mr. Keshar Patra)	Details of location	Khondbond Ir (M/s TAT District State - O <u>Ground Wa</u> t	
	5.87	5.16	4.87	5.94	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	M/s Khondbond Iron & Manganese Mine (M/s TATA Steel Limited) District - Kendujhar, State - Odisha-758 034. <u>Ground Water Table Measurement</u> <u>July-2021</u>	
Authorized	0.50	0.70	0.65	0.53	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Mine nent	
Signatory	3.37	4.46	7.44	5.41	Water Grour Mtrs. = :		ANAC INLABS

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**TEST REPORT** 

# Ground Water Level Khondbond Iron & Manganese Mine (April 2021 – September 2021)

Khondbond Iron & Manganese Mine of TATA Steel Ltd. is an operational opencast captive iron mine. Regular monitoring of ground water level in and around the mine lease of existing well is regularly been done in desired frequency. The detailed quality report is attached herewith.

The Khondbond Iron & Manganese Mine has received NOC from CGWA for ground water withdrawal vide no. CGWA/NOC/MIN/ORIC/2018/3887 dated 09.08.2018.

As per recent hydro-geological study & regulatory approval, few additional locations are also incorporated along with proposed piezometers in the area. Monitored water level for of area for the month of April 2021 and July 2021 are as follows:

Sr. No.	LOCATION		MONTH	
Sr. NO.	EOCATION	April 2021	July 2021	
Existing D	Dug Well Locations:			
1.	Guruda Village	4 m 08 cm	4 m 22 cm	
2.	Ganua Sebasram, Ganua Village	5 m 65 cm	5 m 41 cm	
3.	OMC Colony, Near Khondbond Mine Road	5 m 97 cm	5 m 37 cm	
4.	Khondbond Village, Near road side	5 m 21 cm	4 m 46 cm	
5.	Gonua near MGM Mess area	2 m 40 cm	1 m 96 cm	
6.	Khondbond road, near field	2 m 69 cm	2 m 20 cm	
NEW PIEZC	METER LOCATIONS			
7.	PB gate	13 m 40 cm	12 m 00 cm	
8.	Garden Area	92 m 54 cm	89 m 76 cm	
9.	N Ore Body	89 m 76 cm	87 m 48 cm	
10.	Near STP	52 m 37 cm	52 m 09 cm	
11.	Manganese area	72 m 01 cm	68 m 76 cm	

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# Piezometer installed at various locations at Khondbond Iron & Manganese Mine, Tata Steel Ltd.



Piezometer (PB gate, Garden area, N orebody area)



Piezometer (STP and Manganese) with digital recorder

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# **Ground water Quality** (April 2021 – September 2021) Khondbond Iron & Manganese Mine

		ORT			<ul> <li>Agricultural &amp;</li> </ul>	wed by : Food Sa Processed Food	By Quality Council of India fety & Standards Authority Products Export Developr (BIS) • Export inspection	a by - NABET and N y of India under FSS ment Authority (APE	
	west No. + Al	BI /26052021/2-4		lated 26/05/	2021		Page 1	of 3	
est Report No. : ALPL/26052021/2-4 Issued To : M/s Khondbond Iron & Manganese Mines. (M/s TATA Steel Limited)			Sample Inward Inward Date Reference			9* /962	Analysis Start Analysis End Sample Category	20/05/2021 26/05/2021 Water	
Sample Name Sample Source			Sample Par	ticulars	Sample Condition		Quantity Received		
	und Water	Dugwell	Sample Cod	e-GW-?	and the second se	e Preserved	2.0 Ltr &		
	Sample Co		Sampling				Sampling Location Guruda Village (Nr. Club		
Anaco	n Representative	e Mr. Siddhartha Patra	14/05/2	021	10.45 am	to 5.30 pm	Garuda village	e (Nr. Club)	
				TEST RI	SULTS				
s.n.	N. Test Parameter		Measurement Unit			IS 10 (Drinking W Including / Acceptable	rement as per 9500 : 2012 ater Specifications) Amendment No. 2 Per missible Limit #	Test Result	
-						Limit	Limit	1	
1	Biological Te Escherichia	esting 1.Water	Per 100 ml	15 1519	35:2016	Absent	Absent	Absent	
II		sting - 1.Water	Tel 100 mi	10 10 10	10110010		- May		
2	pH value	and a contractor	-	IS 3025 (P	art 11) : 1983	6.5 to 8.5	No relaxation	7.71 at 25°C	
3	Turbidity		NTU	1S 3025 (P	art 10) : 1984	- 1	5 .	0.6	
	Colour	4	Hazen units	18 2025 /E		. 5			
4					Part 4): 1983	and the second se	15	1	
5	Odour			IS 3025 (P	art 5) : 2018	Agreeable	Agreeable	Agreeable	
5	Taste '			IS 3025 (P IS 3025 (P	art 5) : 2018 'art 8) : 1984	Agreeable Agreeable	Agreeable	Agreeable Agreeable	
5 6 7	Taste Free residua		- mg/l	1S 3025 (P IS 3025 (P IS 3025 (Pa	art 5) : 2018 'art 8) : 1984 rt 26) : 1986	Agreeable Agreeable Min. 0.2	Agreeable Agreeable 1	Agreeable	
5 6 7 8	Taste Free residua Total dissol	ved solids	- 	IS 3025 (P IS 3025 (P IS 3025 (Pa IS 3025 (Pa	art 5) : 2018 'art 8) : 1984 rt 26) : 1986 art 16) : 1984	Agreeable Agreeable Min. 0.2 500	Agreeable	Agreeable Agreeable BDL(DL-0.1) 236	
5 6 7 8 9	Taste Free residua Total dissol Fluoride (as	ved solids F) -	- mg/l	1S 3025 (P IS 3025 (F IS 3025 (Pa IS 3025 (Pa IS 3025 (P IS 3025 (P	art 5) : 2018 'art 8) : 1984 rt 26) : 1986	Agreeable Agreeable Min. 0.2	Agreeable Agreeable 1 2000 1.5 No relaxation	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.1 BDL(DL-0.005	
5 6 7 8	Taste Free residua Total dissol	ved solids F) - CN)	- mg/l mg/l mg/l	IS 3025 (P IS 3025 (P IS 3025 (Pa IS 3025 (P IS 3025 (P IS 3025 (P IS 3025 (P)	art 5) : 2018 art 8) : 1984 rt 26) : 1986 art 16) : 1984 art 60) : 2008	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250	Agreeable Agreeable 1 2000 1.5 No relaxation 1000	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.005 BDL(DL-0.005 48.57	
5 6 7 8 9 10	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as	ved solids F) - CN)	- mg/l mg/l mg/l mg/l	IS 3025 (P IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa IS 3025 (P IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa IS 3025 (Pa	art 5): 2018 Part 8): 1984 rt 26): 1986 art 16): 1984 art 60): 2008 art 27): 1986 Part 32): 1988 Part 23): 1986	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200	Agrecable Agreeable 1 2000 1.5 No relaxation 1000 600	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.005 48.57 140	
5 6 7 8 9 10 11 12 13	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as Total Alkali Total hardn	ved solids F) CN) G(I) inity (as CaCO <sub>3</sub> ) ess (as CaCO <sub>3</sub> )	- mg/l mg/l mg/l mg/l mg/l mg/l mg/l	IS 3025 (P IS 3025 (Pa IS 3025 (Pa))	art 5): 2018 'art 8): 1984 rt 26): 1986 art 16): 1986 art 16): 2008 art 27): 1986 'art 23): 1988 fart 23): 1988 'art 23): 1986 'art 21): 2009	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200 200	Agreeable Agreeable 1 2000 1.5 No relaxation 1000 600 600	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.1) BDL(DL-0.005 48.57 140 192.06	
5 6 7 8 9 10 11 12 13 14	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as Total Alkali Total hardn Calcium (as	ved solids F) CN) i Cl) inity (as CaCO <sub>3</sub> ) ess (as CaCO <sub>3</sub> ) i Ca)	- mg/l mg/l mg/l mg/l mg/l mg/l mg/l	IS 3025 (P IS 3025 (P) IS 3025 (P)	art 5): 2018 'art 8): 1984 rt 26): 1986 art 16): 1984 art 60): 2008 art 27): 1986 'art 32): 1988 'art 23): 1988 'art 23): 2009 'art 40): 1991	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200 200 200 75	Agrecable Agreeable 1 2000 1.5 No relaxation 1000 600 600 200	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.005 48.57 140 192.06 54.32	
5 6 7 8 9 10 11 12 13 14 15	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as Total Alkali Total hardn Calcium (as Magnesium	ved solids F) CN) i Cl) inity (as CaCO <sub>3</sub> ) ess (as CaCO <sub>3</sub> ) Ca) (as Mg)	- mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1	IS 3025 (P IS 3025 (F IS 3025 (F IS 3025 (F IS 3025 (F IS 3025 (F	art 5): 2018 art 8): 1984 art 26): 1986 art 16): 1984 art 60): 2008 art 27): 1986 art 32): 1988 art 23): 1988 art 23): 1988 art 21): 2009 art 21): 2009 art 40): 1991 Part 46): 1994	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200 200 75 30	Agreeable Agreeable 1 2000 1.5 No relaxation 1000 600 600 200 100	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.1) BDL(DL-0.002 48.57 140 192.06 54.32 12.75	
5 6 7 8 9 10 11 12 13 14 15 16	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as Total Alkali Total Alkali Total hardm Calcium (as Magnesium Sulphate (as	ved solids F)	- mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1	IS 3025 (P IS 3025 (P) IS 3025 (P)	art 5): 2018 art 8): 1984 art 26): 1986 art 16): 1984 art 60): 2008 art 27): 1986 art 32): 1986 art 32): 1988 art 23): 1988 art 21): 2009 art 40): 1991 art 46): 1994 art 24): 1986	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200 200 200 75 30 200	Agreeable           Agreeable           1           2000           1.5           No relaxation           1000           660           600           200           100           400	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.02) 48.57 140 192.06 54.32 12.75 13.74	
5 6 7 8 9 10 11 12 13 14 15	Taste Free residua Total dissol Fluoride (as Cyanide (as Chloride (as Total Alkali Total hardn Calcium (as Magnesium	ved solids F)	- mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1 mg/1	IS 3025 (P IS 3025 (P) IS 3025 (P)	art 5): 2018 art 8): 1984 art 26): 1986 art 16): 1984 art 60): 2008 art 27): 1986 art 32): 1988 art 23): 1988 art 23): 1988 art 21): 2009 art 21): 2009 art 40): 1991 Part 46): 1994	Agreeable Agreeable Min. 0.2 500 1.0 0.05 250 200 200 200 75 30 200	Agreeable Agreeable 1 2000 1.5 No relaxation 1000 600 600 200 100	Agreeable Agreeable BDL(DL-0.1) 236 BDL(DL-0.02) 48.57 140 192.06 54.32 12.75 13.74	

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#### **TEST REPORT**

hydrocarbon (PAH) Miaeral Oil

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est Re	nort No. : Al	LPL/26052021/2-4		dated 26/05/2	2021 -		Page 2	of 3
Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Sample Inward No.         2021/MON-54/60-9           Inward Date         19/05/2021           Reference         W.O 3000132460/962           Reference Date         15.05.2020				Analysis Start Analysis End Sample Category	20/05/2021 26/05/2021 Water	
Sample Name Ground Water Dugwell Sample Collected By Anacon Representative Mr. Siddhartha Patra			Sample Particulars Sample Code-GW-2 Sampling Date 14/05/2021		Sample Condition Scaled & Ice Preserved Sampling Time 10.45 am to 5.30 pm		Quantity Received 2.0 Ltr & 250 ml Sampling Location Guruda Village (Nr. Club)	
S.N.	5.N. Test Parameter		Test Parameter Measurement		. (D		Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2	
					1		Permissible Limit *	
п	Chemical Te 2. Residues							12
20	Iron (as Fe)		mg/l		art 2) : 2019	1.0	No relaxation	0.21
21	Copper (as C	Cu)	mg/l	IS 3025 (Part 2) : 2019		0.05	1.5	BDL(DL-0.03
22	Manganese (	as Mn)	mg/l	IS 3025 (Part 2) : 2019		0.1	0.3	BDL(DL-0.05
23	Mercury (as	Hg)	mg/1	and the second se	art 48) : 1994	0.001	No relaxation	BDL(DL-0.000
24	Cadmium (a	s Cd)	mg/l		art 41) : 1992	0.003	No relaxation	BDL(DL-0.00)
25	Selenium (a	s Se)	mg/l		art 56) : 2003	0.01	No relaxation	BDL(DL-0.00
26	Arsenic (as	As)	mg/l	and the second second second second	art 37): 1988	0.01	No relaxation	BDI (DL-0.01
27	Aluminium		mg/l	and the second s	32:2003	0.03	0.2	BDL(DL-0.01
28	Lead (as Pb	)	mg/l		art 47) : 2003	0.01	No relaxation	BDL(DL-0.00
29	Zinc (as Zn)		mg/1	and the second se	Part 2) : 2019	5	15	BDL(DL-0.1
30	Total Chron	and the second se	mg/l	and the second se	Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03
31	Boron (as B		mg/l	IS 3025 (P	art 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear hydrocarbor		µg/1 -	ANq	RES-30	·0.1 ·	No relaxation	BDL(DL-0.001

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ANqr RES-40

Verified By 0 &Rz 8 Sonali Gharpure Shashikant Satdeve Technical Manager Sr. Chemist

mg/l

Authorized Signatory Jaw P Dr. (Mrs.) S.D. Garway

0.5

No relaxation BDL(DL-0.03)

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Quality Manager

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Manager Environment (Khondbond)



# FOR BETTER ENVIRO

ANACON LABORATORIES PVT. LTD.

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Cartillad
 Recognized By Ministry of Environment & Forests (MoEF), New Delhi
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 Agricultural & Processed Food Products Export Development Authority (APEDA);
 Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK

#### **TEST REPORT**

Fest Report No. : ALPL/26052021/2-4 Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Sample Inward No. Inward Date Reference Reference Date	19/05/	MON-54/60-9 2021 3000132460/962	Analysis Start Analysis End Sample Category.	20/05/202 26/05/202 Water
Sample Name Ground Water			ars V-2	Sample Condition Sealed & Ice Preserv	Kana a she she she she she she she	
A REAL PROPERTY AND A REAL			c	Sampling Time 10.45 am to 5.30 p	m Guruda Villa	
		TE	ST RESU	LTS		
	14	N		- 2	Requirement as per IS 10500 : 2012 ing Water Specifications)	

S.N.	Test Parameter	Measurement Unit	Test Method	IS 10500 (Drinking Wate) Including Ame	Test Result	
				Acceptable Limit	Permissible Limit "	1. A. 1
п	Chemical Testing 2. Residues In Water			1.0		
33	Pesticide Residues					
i	Aipha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
11	Beta HCH	µg/1 -	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
īv	Alachlor	µg/l	ANgr RES-28	- 20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	μg/1	ANgr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/ł	ANgr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachior	μg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	μg/1	ANgr RES-28	. 30	No relaxation	BDL(DL-0.03)
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'- DDT)	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	μg/l	ANgr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/1	ANqr RES-28	0, 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	μg/1	ANgr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µġ/l	ANgr RES-29	9	No relaxation	BDL(DL-0.03)
XV	Malathion	µg/1	ANgr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	μg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	μg/l	ANgr RES-29	2	No relaxation	BDL(DL-0.03)

NOTES: 

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multiple "multi" is equivalent to "ppm".

Results does not relevant.

BDL- Below detection limit 
DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

ANOT RES-28, 29, 30 & 40 : Indicates detection limit of instrument/method.

REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it

Verified By 8 Sonali Gharpure Technical Manager

Authorized Signatory 10

Dr. (Mrs.) S.D. Garway Quality Manager

ANAC (INLINES

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TEST REPORT

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Issued To : M/s Khondbond		Sample Inward No. Inward Date	2021/MON-54/60 19/05/2021	-10	Analysis Start Analysis End	20/05/2021 26/05/2021
Manganese Mine (M/s TATA Steel		Reference Date	W O - 300013246 15.05.2020	60/962	Sample Category	Water
Sample Name Sample Source Ground Water Borewell		Sample Particula Sample Code-GW	G91	Condition Ice Preserved	Quantity Received 2.0 Ltr & 250 ml	
	allected By e Mr. Siddhartha Patra	Sampling Date 14/05/2021		ling Time n to 5.30 pm	Sampling L Guruda V	
		TE	ST RESULTS			
1.00					irement as per 10500 : 2012	

S.N.	Test Parameter Measure Unit		Test Method	IS 1050 (Drinking Wate Including Am	Test Result				
	- × -				Permissible Limit "				
I	<b>Biological Testing</b> 1.Water	*		all de		4			
1	Escherichia coli	Per 100 ml	IS 15185	<ul> <li>Absent</li> </ul>	Absent	Absent			
II	Chemical Testing 1.Water	nemical Testing 1.Water							
2	pH value		IS 3025 (Part 11) : 1983	65 to 85	No relaxation	7 33 at 25°C			
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0,6			
4	Colour	Hazen units	IS 3025 (Part 4): 1983	5	15	1 .			
5	Odour		IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable			
6	Taste	Sec. 5.	IS 3025 (Part 8): 1984	Agreeable	Agreeable	Agreeable			
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)			
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	198			
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)			
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)			
11	Chloride (as Cl)	mg/l	1S 3025 (Part 32) :1988	250	1000	51.48			
12	Total Alkalinity (as CaCO <sub>1</sub> )	mg/l	IS 3025 (Part 23): 1986	200	600	114			
13	Total hardness (as CaCO <sub>1</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	158.4			
14	Calcium (as Ca) ·	mg/l	IS 3025 (Part 40) : 1991	75	200	41.13			
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46): 1994	30	100	12.75			
16	Sulphate (as SO4)	mg/l	1S 3025 (Part 24) : 1986	200	400 .	13.22			
17	Nitrate (as NO1)	mg/l	APHA Method 23rd Edition	- 45	No relaxation	9.01			
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	· mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)			
19	Anionic detergents (as MBAS)	mg/l	1S 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01)			

NOTES: 
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Verified By Swati Shrivastava

Technical Manager

**Authorized Signatories** 

Poora Kathane Technical Manager

Dans ť Dr. (Mrs.) S.D. Garway

Quality Manager

ANAC MD.A.

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Manager Environment (Khondbond)

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Test B	eport No. : /	ALPL/26052021/2-5		dated 26/05/	2021		Page 2	of 3					
Issued		The second	Sample Inward	and the set of the set	1/MON-54/60-	-10	Analysis Start	20/05/202					
	hondbond l	fron &	Inward Date		05/2021		Analysis End	26/05/203					
	anese Mines				0 300013246	0/062	remargan Lana						
	TATA Steel		Reference			W 902	Sample Category	Water					
(IND.2	TATA Side	Linnedy	Reference Dat	e 15.	05.2020		Sample Category	water					
Sam	Sample Name Sample Source		Sample Pa	rticulars	Sample	Condition	Quantity I						
Giu	und Water	Borewell	Sample Co	de GW 3	Sealed & I	ce Preserved	2.0 L tr &	250 ml					
	Sample Collected By		Samplin	g Date	Sampl	ing Time	Sampling	Location					
Anacos		e Mr. Siddhartha Patra	14/05/			to 5.30 pm	Guruda	/illage					
7 LINE CO	o respected and	e ande, Gradena and I men		TEST RE									
				I LIGE INA	10 C 14 1 C	Requi	rement as per						
							0500 : 2012	100					
Alexander	0	and a second	Measurement		-		ater Specifications)	· Test Resu					
S.N.	Test	Parameter	Unit Test Method		Including Amendment No. 2		· Iest Resu						
			1000	1 B		Acceptabl							
						Limit	Limit "						
п	Chemical T 2. Residues			10	1.1								
20	Iron (as Fe)		mg/l	1S 3025 (P	art 2) : 2019	1.0	No relaxation	0.31					
21	Copper (as 0		mg/l		art 2) : 2019	0.05	1.5	BDL(DL-0					
22	Manganese		ing/l			IS 3025 (Part 2) : 2019						0.3	BDL(DL 0
23	Mercury (as		mg/l					0.001	No relaxation	BDL(DL-0.0			
24	Cadmium (a		mg/l	IS: 3025 (Part 41): 1992		0.003	No relaxation	BDL(DL-0.					
25	Selenium (a		mg/l	1S: 3025 (Part 56): 2003		0.01	No relaxation	BDL(DL-0.					
26	Arsenic (as		mg/l*	IS: 3025 (Part 37): 1988		0.01	No relaxation	BDL(DL-0					
27	Aluminium		mg/l		02:2003	- 0.03	0.2	BDL(DL-0					
28	Lead (as Pb		mg/l		art 47) : 2003	0.01	No relaxation	BDL(DL-0					
29	Zinc (as Zn		mg/l		Part 2) : 2019	5	15	BDL(DL-					
30		nium (as Cr)	mg/l		Part 2): 2019	+ 0.05	No relaxation	BDL(DL-0					
31	Boron (as B		mg/l		Part 2) : 2019	0.5	2.4	BDL(DL-					
	Polynuclear					1							
32	hydrocarbo		μg/l	1.000	r RES-30	0.1	No relaxation	BDL(DL-(					
33	Mineral Oil		mg/l	ANqr	RES-40	0.5	No relaxation	BDL(DL-0.					
Test i     nerishab	report shall not be de sample(s) shall	reproduced except in full be disposed off after 30 dz	without prior written a rys and 15 days respect	pproval of Anaco tively from the dat	n Labs.   Liability te of issue of Test F	of Anacon Labs is leport, unless specif	sted sample(s) and applicable limited to invoiced amount o ied otherwise. • 'mg/l' is equ 40 : Inhouse validated meth	nly.  Non-perish iivalent to 'ppm'.					
		Veri	fied By			Author	ized Signatory						
	1	- 8	. /.	7		15	~ e						
	(	382	.03	-		2	yant.						
	108 B.	Shashikant Satdeve	Sonali Gl	harmure		Dr. (M	rs.) S.D. Garway						
		Sr. Chemist	Technical				ality Manager						
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Manager Environment (Khondbond)



TEST REPORT

#### ANAC N ENTA HEALTH FORE

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	est Report No. : ALPL/26052021/2-			ed 26/05/			Page 3 of 3	
	d To :		Sample Inward N	o. 202	21/MON-54/6	0-10	Analysis Start	20/05/2021
	Khondbond 1		Inward Date	19/	05/2021		Analysis End	26/05/2021
	ganese Mines		Reference	W	0 - 30001324	60/962		
(M/s	(M/s TATA Steel Limited)		Reference Date	15.	05.2020		Sample Category	Water
	nple Name	Sample Source	Sample Partic			e Condition	Quantity I	Received
Gro	und Water	Botcwell	Sample Code-0	3W-3	Scaled &	Ice Preserved	2.0 Ltr &	250 ml
	Sample Co	llected By	Sampling D	ate	Samp	ling Time	Sampling	Location
Anaco	in Representative	Mr. Siddhartha Patra	14/05/202	1	10.45 at	m to 5.30 pm	Guruda	
				TEST RE		-	1	
	-					Requi	rement as per	
- I.			S				0500 : 2012	
S.N. 1	Test Parameter					(Drinking Water Specifications)		
			Unit		Including Amendment No. 2		Test Result	
			-			Acceptable	Permissible	
п	Chemical Te 2. Residues							
34	Pesticide Res		<u> </u>			1		1
1	Alpha-HCH		με/1	ANor	RES-28	0.01	No relaxation	BDL(DL-0.01
H	Beta HCH		μg/l		RES-28	0.01	No relaxation	and the second sec
iii	Delta- HCH	- 4	με/1		RES-28	0.04	No relaxation	BDL(DL-0.03 BDL(DL-0.03
iv	Alachlor		μg/1		RES-28	20	No relaxation	
v	Aldrin / Diele	Irin	μg/1		RES-28	0.03	No relaxation	BDL(DL-0.0) BDL(DL-0.0)
vi	Atrazine		μg/1		RES-29	2	No relaxation	BDL(DL-0.0.
vii	Butachlor		μg/1		RES-29	125	No relaxation	BDL(DL-0.0.
viii	Chlorpyrifos	1	μg/1		RES-28	30	No relaxation	BDL(DL-0.03
ix	DDT (p.p'-DD)	E, e,p'-DDE, p,p'-DDD, - DDT, p,p'- DDT )	μg/1		RES-28	1	No relaxation	BDL(DL-0.03 BDL(DL-0.03
x	Gamma - HC	H (Lindane)	μg/1	· ANgr	RES-28	2	No relaxation	BDL(DL-0.03
xi	2,4-Dichlorop	henoxyacetic acid	μg/1		RES-29	30	No relaxation	BDL(DL-0.03
xii	Endosulphan		'µg/l		RES-28	0.4	No relaxation	BDL(DL-0.0)
xiii	Ethion		μg/l	the second se	RES-29	3	No relaxation	BDL(DL-0.0
xiv	Isoproturon		µg/l		RES-29	9	No relaxation	BDL(DL-0.0
XV	Malathion	50 S	- μg/l		RES-29	190	No relaxation	BDL(DL-0.0
xvi	Methyl Parati	nion	µg/l		RES-29	.0.3	No relaxation	BDL(DL-0.0
xvii	Monocrotoph	05	μg/l		RES-29	1	No relaxation	BDL(DL-0.03
	Phorate							

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 mg/l' is equivalent to 'ppm'.
 Result for test no. 7 is not relevant.
 BDL- Below detection limit 
 DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.
 ANgr RES-28, 29, 30 & 40 :
 Inhouse validated method.

Tananese valuated method. REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By Sonali Gharpure Technical Manager

Authorized Signatory Daw-P Dr. (Mrs.) S.D. Garway Quality Manager ANAC MILAI

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Manager Environment (Khondbond)



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#### TEST REPORT

and the second se	LPL/26052021/2-6	dated 26/	05/2021	Page 1	of 3	
Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Inward Date Reference	2021/MON-54/60-11 19/05/2021 W.O 3000132460/962 15.05.2020	Analysis Start Analysis End Sample Category	20/05/2021 26/05/2021 Water	
Sample Name Ground Water Dugwell Sample Collected By Anacon Representative Mr. Siddhartha Patra		Sample Particulars Sample Code-GW-4	Sample Condition Scaled & Ice Preserved	Quantity Received		
		Sampling Date 14/05/2021	Sampling Time 10.45 am to 5.30 pm	Sampling Location Khondbond Village (Mr. Mothua Mun		

#### TEST RESULTS

S.N.	.N. Test Parameter	Test Parameter Measurement Unit		Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
	*			Acceptable Limit	Permissible Limit *		
1	<b>Biological Testing</b> 1.Water		-		1		
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent	
п	Chemical Testing 1.Water		40		1.0	I constant in	
2	pH value		IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.63 at 25°C	
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4	
_ 4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1	
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable	
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable	
7	Free residual chlotine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)	
8	Total dissolved solids	mg/1.	IS 3025 (Part 16): 1984	500 .	2000	228	
9	Fluoride (as F)	mg/l	1S 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)	
10	Cyanide (as CN)	mg/l	· 1S 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)	
11	Chloride (as CI)	. mg/l	IS 3025 (Part 32) :1988	250	1000	52.45	
12	Total Alkalinity (as CaCO3)	mg/l	IS 3025 (Part 23) : 1986	200	600	120	
13	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	180.18	
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	52.77	
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	10.86	
16	Sulphate (as SO <sub>4</sub> )	mg/l	1S 3025 (Part 24) : 1986	200	400	12.44	
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	8.93	
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l *	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)	
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)	

NOTES: 

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More 'mg/l' is equivalent to 'ppm'.

Results for test no. 6 is not relevant.

More 'mg/l' is equivalent to 'ppm'.

Result is functioned and shall be considered as 'absent'.

Verified By Fugh Swati Shrivastava

Technical Manager

Pooja Kathahe Technical Manager

Authorized Signatories an Dr. (Mrs.) S.D. Garway Quality Manager

AMAC MALAR

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Manager Environment (Khondbond)





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#### **TEST REPORT**

est Report No. : ALPL/26052021/2-6			Page 2	20/05/2021
ssued To : M/s Khondbond Iron &		2021/MON-54/60-11 19/05/2021	Analysis Start Analysis End	26/05/2021
Manganese Mines (M/s TATA Steel Limited)	Reference	W.O 3000132460/962 15.05.2020	Sample Category	Water
Sample Name Sample Source Ground Water Dugwell	Sample Particulars Sample Code GW 4	Sample Condition Sealed & Ice Preserved	d Quantity Received 2 0 1 tr & 250 ml	
Sample Collected By Anacon Representative Mr. Siddhartha Patra	Sampling Date 14/05/2021	Sampling Time 10,45 am to 5,30 pm	Sampling Location Khondbond Village (Mr. Mothua M	

s.n.	Test Parameter	Test Parameter Measurement Unit		Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2.		Test Result
				Acceptable Limit	Per missible Limit *	
п	Chemical Testing 2. Residues In Water	±.		···		
20	Iron (as Fe)	mg/l	. IS 3025 (Part 2) : 2019	- 1.0	No relaxation	0.16
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	1S: 3025 (Part 48): 1994	' 0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS: 3025 (Part 41): 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS: 3025 (Part 56): 2003	10.0	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS: 3025 (Part 37): 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	-BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	μg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.001)
33	Mineral Oil	mg/l	ANgr RES-40	0.5	No relaxation	BDL(DL-0.03)

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Verified By 9 38-6

Shashikant Satdeve Sr. Chemist .

V Sonali Gharpure Technical Manager

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Authorized Signatory Van

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ANAC INLASS

Dr. (Mrs.) S.D. Garway Quality Manager

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#### TEST REPORT

ILUI NEI	VILI		<ul> <li>Bureau of India Standar</li> </ul>	ds (BIS) + Export inspection	DOUNCH (EIG); AGMARK
fest Report No. : A	LPL/26052021/2-6	dated 26/05	5/2021	Page 3	of 3
Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Inward Date 19 Reference W	121/MON-54/60-11 9/05/2021 9.0,- 3000132460/962 5.05.2020	Analysis Start Analysis End Sample Category	20/05/2021 26/05/2021 Water
Sample Name Ground Water	Sample Source	Sample Particulars Sample Code-GW-4	Sample Condition Sealed & Ice Preserved	Quantity R 2.0 Lir & 1	
Sample Collected By Anacon Representative Mr. Siddhartha Patra		Sampling Date Sampling Time		Sampling Location Khondbond Village (Mr. Mothua Munda)	

TEST RESULTS

s.N.	Test Parameter	Measurement Unit	Test Method	Requireme IS 10500 (Drinking Water Including Ame	Test Result	
				Acceptable Limit	Permissible Limit "	- 2
п	Chemical Testing 2. Residues In Water		11		6	- 
33	Pesticide Residues		1			
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
ili	Delta- HCH	μg/l	ANgr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
٧	Aldrin / Dieldrin	μg/l	ANgr RES-28	0.03	No relaxation	BDL(DL-0.03)
vî	Atrazine	μg/l	ANgr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	μg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	μg/1	ANgr RES-28	30	No relaxation	BDL(DL-0.03
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'-DDT )	µgЛ	ANqr RES-28		No relaxation	BDL(DL-0.03)
х	Gamma - HCH (Lindane)	μg/l -	ANqr RES-28	2	No relaxation	BDL(DL-0.03
xi	2,4-Dichlorophenoxyacetic acid .	μg/l	ANgr RES-29	30	No relaxation	BDL(DL-0.03
xii	Endosulphan	µg/l	ANgr RES-28	0, 4	No relaxation	BDL(DL-0.03
xiii	Ethion	μg/1	ANgr RES-29	3	No relaxation	BDL(DL-0.03
xiv	Isoproturon	μg/1	ANgr RES-29	9	No relaxation	BDL(DL-0.03
XV	Malathion	μg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03
xvi	Methyl Parathion	μg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03
xvii	Monocrotophos	μg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03

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REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with 18:10500:2012, for tests conducted, indicating that it

Verified By Sonali Gharpure Technical Manager

Authorized Signatory Daw Dr. (Mrs.) S.D. Garway Quality Manager

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Manager Environment (Khondbond)



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**TEST REPORT** 

Test Report No. : )	ALPL/26052021/2-7	dated 26	5/05/2021		Page 1 of 3
Issued To : M/s Khondbond I Manganese Mine		Sample Inward No. 2021/MON-54/60-12 Inward Date 19/05/2021		Analysis Start . Analysis End	20/05/2021
(M/s TATA Steel		Reference         W.O 3000132460/962           Reference Date         15.05.2020		Sample Category	Water
Sample Name Ground Water	and the second		Sample Condition Sealed & Ice Preserved	Quantity R 2.0 Ltr &	
Sample Collected By Anacon Representative Mr. Siddhartha Patra		Sampling Date 14/05/2021	Sampling Time 10.45 am to 5.30 pm	Sampling Location OMC Colony	

#### TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result				
			5 m	Acceptable Limit	Permissible Limit #					
1	Biological Testing 1.Water									
1	Escherichia coli	Per 100 ml	IS 15185	Absent	Absent	Absent				
п	Chemical Testing 1.Water									
2	pH value		1S 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.56 at 25°C				
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4				
4	Colour	· Hazen units	1S 3025 (Part 4) : 1983	5	15	1.				
5	Odour		IS 3025 (Part 5) : 2018	, Agreeable	Agreeable	Agreeable				
6	Taste		IS 3025 (Part 8): 1984	Agreeable	Agreeable	Agreeable				
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)				
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	218				
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)				
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)				
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	50.51				
12	Total Alkalinity (as CaCO3)	mg/l	IS 3025 (Part 23) : 1986	200	600	118				
13	Total hardness (as CaCO3)	mg/l	IS 3025 (Part 21) : 2009	200	600	152.46				
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	42.68				
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	10.39				
16	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 1986	200	400	10.63				
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	10.42				
18	Phenolic compounds . (as C <sub>6</sub> H <sub>5</sub> OH) .	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001				
19	Anionic detergents (as MBAS)	mg/l -	IS 13428 : 2005 Annex K	.0.2	1.0	BDL (DL-0.01				

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Verified By Jacob Swati Shrivastava

Technical Manager

Authorized Signatories

M Poeja Kathane Technical Manager

P yam. Dr. (Mrs.) S.D. Garway Quality Manager

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Manager Environment (Khondbond)





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Test F	Report No. : /	LPL/26052021/2-7	7	dated 26/05	/2021			Page 2 of 3
Issued To :			Sample Inward No. 2021/MON-54/60-12		-12	Analysis Start	- 20/05/2021	
M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited) Sample Name Ground Water Dugwell Sample Collected By Anacon Representative Mr. Siddhartha Patra		Inward Date         19/05/2021           Reference         W.O 3000132460/962           Reference Date         15.05.2020			Analysis End	26/05/2021		
					Sample Category	Water		
			Sample Particulars         Sample Condition           Sample Code-GW-5         Sealed & Ice Preserved           Sampling Date         Sampling Time           14/05/2021         10.45 am to 5.30 pm		and the second	Quantity Received 2.0 Ltr & 250 ml Sampling Location OMC Colony		
				TEST R	ESULTS			
S.N.	Test Parameter		Measurement Unit	Test Method Inc		IS 10 (Drinking We	Requirement as per IS 10500 : 2012 nking Water Specifications) cluding Amendment No. 2	
						Acceptable Limit	Permissible Limit "	
п	Chemical To 2. Residues		1.2	10	×.			199
20	Iron (as Fe)	е.,	mg/l	IS 3025 (Part 2) : 2019		1.0	No relaxation	0.27
21	Copper (as C	lu)	mg/1	IS 3025 (Part 2) : 2019		0.05	1.5	BDL(DL-0.03)
22	Manganese (	as Mn)	mg/l	1S 3025 (Part 2) : 2019		0.1	0.3	BDL(DL-0.05)
23	Mercury (as	Hg)	mg/l	IS: 3025 (I	Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005
24	Cadmium (a	s Cd)	mg/l	IS: 3025 (Part 41): 1992		0.003	No relaxation	BDL(DL-0.001)
25	Seleníum (as	s Se)	mg/l	IS : 3025 (1	Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as	As)	mg/l		Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium	(as Al)	mg/l IS 15302 : 2003		Carden of the second	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	-	mg/l	IS 3025 (P	art 47) : 2003	0.01	No relaxation	BDL(DL-0.001)

29 30 Zinc (as Zn) mg/l IS 3025 (Part 2): 2019 15 BDL(DL-0.1) 0.05 Total Chromium (as Cr) mg/l IS 3025 (Part 2): 2019 No relaxation BDL(DL-0.03) 31 Boron (as B) mg/l 1S 3025 (Part 2) : 2019 ·0.5 2.4 BDL(DL-0.1) Polynuclear aromatic 32 µg/l ANqr RES-30 0.1 No relaxation BDL(DL-0.03) hydrocarbon (PAH) 33 ANqr RES-40 0.5 No relaxation BDL(DL-0.001) Mineral Oil mg/l

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Verified By 38.82

Sonali Gharpure Technical Manager Shashikant Satdeve Sr. Chemist

Authorized Signatory Maw

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Dr. (Mrs.) S.D. Garway Quality Manager

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REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By 0 Sonali Gharpure

Technical Manager

Authorized Signatory

yau Dr. (Mrs.) S.D. Garway Quality Manager

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**TEST REPORT** 

Test Report No. : ALPL/31082021/1-1 Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Sample Inward No. Inward Date Reference Reference Date	<ul> <li>2021/MON-100/60-8</li> <li>20/08/2021</li> <li>W.O 3000132460/962</li> <li>15.05.2020</li> </ul>		Analysis Start Analysis End Report Issue Date Sample Category	21/08/202 28/08/202 31/08/202 Water
Sample Name	Sample Source	Sample Particula		Sample Condition	Quantity Received	
Ground Water	Dugwell	Sample Code-GW		Scaled & Ice Preserved	2.0 Ltr & 250 ml	
Sample Collected By		Sampling Date		Sampling Time	Sampling Location	
Anacon Representative Mr. K. Pandey		17/08/2021		10,55 am to 5,15 pm	Ganua Village (Mr. Keshar Patra)	

#### TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result				
	A LANDA ME. CA			Acceptable Limit	Permissible Limit "					
1	Biological Testing 1.Water									
1	Escherichia coli	Per 100 ml	IS 15185	Absent	Absent	Absent				
11	Chemical Testing 1. Water									
2	pH value	No. Company	IS 3025 (Part 11): 1983	6.5 to 8.5	No relaxation	7.49 at 25°C				
3	Turbidity	NTU	IS 3025 (Part 10): 1984	1	5	0.6				
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	I I				
5	Odour		15 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable				
6	Taste		IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable				
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)				
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	218				
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)				
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)				
11	Chloride (as Cl)	mg/l	1S 3025 (Part 32) :1988	250	1000	41.28				
12	Total Alkalinity (as CaCO3)	mg/l	1S 3025 (Part 23) : 1986	200	600	110				
13	Total hardness (as CaCO <sub>3</sub> )	mg/l	1S 3025 (Part 21) : 2009	200	600	153				
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	39.6				
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46): 1994	30	100	13.15				
16	Sulphate (as SO <sub>4</sub> )	mg/l	1S 3025 (Part 24) : 1986	200	400	14.25				
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	7.54				
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)				
19	Anionic detergents mg/l		IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01)				

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Verified By

Plaken Roshani Thakur

Sr. Chemist

Authorized Signatories

Pooja Kathane Technical Manager

1) Gand Dr. (Mrs.) S.D. Garway

Quality Manager

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Manager Environment (Khondbond)


**TEST REPORT** 1.4

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Test Report No. : ALPL/31082021/1					Page 2 of 3					
Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)		Chondbond Iron & Inward Date 20/08/2021 sancse Mines Reference W.O3000132460/962		Analysis Start Analysis End Report Issue Date Sample Category	21/08/2021 28/08/2021 31/08/2021 Water					
	nple Name and Water	Sample Source Dugwell	ALCONDOM: N	Sample Particulars Sample Condition Sample Code-GW-8 Sealed & Ice Preserved		Quantity 2.0 Ltr &				
An	Sample Co acon Representat	llected By ive Mr. K. Pandey	- And	ing Date 8/2021	Sampling Time 10.55 am to 5.15 pm		ite Sampling Time Sampling Loca		Sampling Location Ganua Village (Mr. Keshar Pa	
	200	2		TEST RESU	JLTS	G. Martine				
s.n.	Test Parameter		Test Parameter Measurement Test Method (Drinki		IS 10 (Drinking Wa	rement as per 10500 : 2012 Vater Specifications) Amendment No. 2				
1						Acceptable				
11	Chemical Te 2. Residues 1									
20	Iron (as Fe)		mg/l	IS 3025 (Part 2	2):2019	1.0	No relaxation	0.21		
21	Copper (as C	u)	mg/l	IS 3025 (Part )	2):2019	0.05	1.5	BDL(DL-0.03)		
22	Manganese (a	is Mn)	mg/l	IS 3025 (Part.	2):2019	0.1	0.3	BDL(DL-0.05)		
23	Mercury (as I	lg)	mg/l	IS: 3025 (Part 4	18): 1994	0.001	No relaxation	BDL(DL-0.0005		
24	Cadmium (as	Cd)	mg/l	IS : 3025 (Part 4	41): 1992	0.003	No relaxation	BDL(DL-0.001		
25	Scienium (as	Sc)	mg/l	IS : 3025 (Part !	56):2003	0.01	No relaxation	BDL(DL-0.001		
26	Arsenic (as A	s)	mg/l	IS: 3025 (Part.)	37): 1988	0.01	No relaxation	BDL(DL-0.01)		
27	Aluminium (a	is Al)	mg/l	IS 15302 :	2003	0.03	0,2	BDL(DL-0.01)		
28	Lead (as Pb)		mg/l	1S 3025 (Part 4	7):2003	0,01	No relaxation	BDL(DL-0.001		
29	Zinc (as Zn)		mg/l	IS 3025 (Part.	2):2019	5	15	BDL(DL-0,1)		
30	Total Chromi	um (as Cr)	mg/l	IS 3025 (Part	2):2019	0.05	No relaxation	BDL(DL-0.03)		
31	Boron (as B)		mg/l	IS 3025 (Part 2	2):2019	0.5	2.4	BDL(DL-0.1)		
32	Polynuclear a hydrocarbon		µg/l	ANqr RE	S-30	0.1	No relaxation	BDL(DL-0.03)		
33	Mineral Oil		mg/l	ANgr RES	5-40	0.5	No relaxation	BDL(DL-0.001)		

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Verified By 3362 Ve

Shashikant Satdeve Sr. Chemist

&e Sonali Gharpure Technical Manager

Authorized Signatory Deans

Dr. (Mrs.) S.D. Garway Quality Manager

ORATORI ANACONLARS Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122. Email: support@anacon.in; Please Visit us at : www.anaconiaboratories.com DINAL CO

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**TEST REPORT** 

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ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified
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 Approved by : Food Safety & Standards Authority of India under FSS Act
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 Bureau of India Standards (BIS) • Export Inspection council (EIC); AGMARK.

All and the second second	Report No. : ALPL/31082021/1-1	Contract of the Contract of th	d 31/08/20	Theresteren	A CONTRACTOR	Page 3	Section and in the fact of provident of the taken
22000 S	d To :	Sample Inward No. 2021/MON-100/60-8		Analysis Start	21/08/2021		
0.00000-0	Khondbond Iron &	Inward Date	20/08	2021		Analysis End	28/08/2021
	gancse Mines	Reference	W.O	30001324	60/962	Report Issue Date	31/08/2021
(M/s	TATA Steel Limited)	Reference Date	15.05.2020			Sample Category	Water
	nple Name Sample Source ound Water Dugwell	Sample Partie Sample Code-			le Condition & Ice Preserved	Quantity R 2.0 Ltr &	
An	Sample Collected By acon Representative Mr. K. Pandey	Sampling D 17/08/202		1000000	am to 5.15 pm	Sampling L Ganua Village (Mr	
		Т	EST RESI	ULTS			
S.N.	Test Parameter	Measurement Unit	Test Me	thod	IS I (Drinking W	rement as per 0500 : 2012 (ater Specifications) Amendment No. 2	Test Result
		and the second			Acceptable	Permissible Limit "	
н	Chemical Testing 2. Residues In Water			1. A.	S MERICA		
34	Pesticide Residues			M. Santa	100 M	and press in sector	1
1	Alpha-HCH	μg/1	ANgr RJ	ES-28	0.01	No relaxation	BDL(DL-0.0
ii	Beta HCH	μg/l	ANqr RI	2S-28	0.04	No relaxation	BDL(DL-0.0)
iii	Delta- HCH	µg/l	ANqr RI	ES-28	0.04	No relaxation	BDL(DL-0.0
ix	Alachlor	μg/l	ANgr RI	ES-28	20	No relaxation	BDL(DL-0.0
v	Aldrin / Dieldrin	µg/l	ANqr RI	ES-28	0.03	No relaxation	BDL(DL-0.0
vi	Atrazine	μg/l	ANqr RI	ES-29	2	No relaxation	BDL(DL-0.0
vii	Butachlor	µg/l	ANqr RI	ES-29	125	No relaxation	BDL(DL-0.0
viii	Chlorpyrifos	µg/l	ANgr RJ	ES-28	30	No relaxation	BDL(DL-0.0
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'- DDT )	µg/1	ANqr RI	ES-28	1	No relaxation	BDL(DL-0.0
X	Gamma - HCH (Lindane)	µg/1	ANqr RI		2	No relaxation	BDL(DL-0.0
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RI		30	No relaxation	BDL(DL-0.0
xii	Endosulphan	μg/1	ANgr RI		0.4	No relaxation	BDL(DL-0.0
xili	Ethion	µg/1	ANgr RI		3	No relaxation	BDL(DL-0.0
xiv	Isoproturon	µg/l	ANqr RI		9	No relaxation	BDL(DL-0.0
XV	Malathion	µg/l	ANgr RI	ES-29	190	No relaxation	BDL(DL-0.0
xvi	Methyl Parathion	μg/l	ANgr RI	ES-29	0.3	No relaxation	BDL(DL-0.0
xvii	Monocrotophos	μg/l	ANqr R		1	No relaxation	BDL(DL-0.0
xviii	Phorate	µg/l	ANgr RI	ES-29	2	No relaxation	BDL(DL-0.0

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Verified By	
0	
Sonali Gharpure	
Technical Manager	
	End of Report-

Authorized Signatory Stand Dr. (Mrs.) S.D. Garway Quality Manager ANACONLARS

GINALOS

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**TEST REPORT** 

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Requirement as per

Test Report No. :	ALPL/31082021/1-2	0	dated 31/08/2021				
Issued To :	s	Sample Inward No.	2021/MON-100/60-9	Analysis Start	21/08/2021		
M/s Khondbond		Inward Date	20/08/2021	Analysis End	28/08/2021		
Manganese Mine		Reference	W.O 3000132460/962	Report Issue Date	31/08/2021		
(M/s TATA Steel		Reference Date	15.05.2020	Sample Category	Water		
Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity R			
Ground Water	Dugwell	Sample Code-GW-9	Scaled & Ice Preserved	2.0 Ltr & 2			
Sample Collected By		Sampling Date	Sampling Time	Sampling L			
Anacon Representative Mr. Siddhartha Patra		17/08/2021	10.55 am to 5.15 pm	Guruda Village			

#### TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	IS 1050 (Drinking Wate Including Am	Test Result		
				Acceptable Limit	Permissible Limit "		
I	Biological Testing 1.Water			a secondaria	and the state of t		
1	Escherichia coli	Per 100 ml	IS 15185 ; 2016	Absent	Absent	Absent	
П	Chemical Testing 1.Water	In-In-					
2	pH value	a second at the second	IS 3025 (Part 11): 1983	6.5 to 8.5	No relaxation	7.63 at 25°C	
3	Turbidity	NTU	18 3025 (Part 10) : 1984	1	5	0.7	
4	Colour	Hazen units	1S 3025 (Part 4) : 1983	5	15	1	
5	Odour		IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable	
6	Taste		IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable	
7	Free residual chlorine	mg/I	1S 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)	
8	Total dissolved solids	mg/l	1S 3025 (Part 16) : 1984	500	2000	242	
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)	
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.05	No relaxation	BDL(DL-0.005)	
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	49.54	
12	Total Alkalinity (as CaCO <sub>3</sub> )	mg/l	1S 3025 (Part 23) : 1986	200	600	136	
13	Total hardness (as CaCO <sub>1</sub> )	mg/l	1S 3025 (Part 21) : 2009	200	600	185.4	
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.84	
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.59	
16	Sulphate (as SO <sub>4</sub> )	mg/l	1S 3025 (Part 24): 1986	200	400	12.18	
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	7.81	
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)	
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)	

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Verified By

haken Roshani Thakur Sr. Chemi

Authorized Signatories Camp Dr. (Mrs.) S.D. Garway Quality Manager

ANACOHLAR

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**TEST REPORT** 

Test Report No. : /	ALPL/31082021/1-2	20	dated 31/08/2021		Page 2 of 3
ssued To :		Sample Inward No.	2021/MON-100/60-9	Analysis Start	21/08/202
M/s Khondbond Iron &		Inward Date	20/08/2021	Analysis End	28/08/202
Manganese Mines		Reference	W.O 3000132460/962	Report Issue Date	31/08/202
(M/s TATA Steel Limited)		Reference Date	15:05:2020	Sample Category	Water
Sample Name	Sample Source	Sample Particulars Sample Condition		Quantity Received	
Ground Water	Dugwell	Sample Code-GW-9 Scaled & Ice Preserv		2.0 Ltr & 250 ml	
Sample Collected By		Sampling Date Sampling Time		Sampling Location	
Anacon Representative Mr. Siddhartha Patra		17/08/2021 10.55 am to 5.15 pr		Guruda Village (Nr. Club)	

S.N.	Test Parameter	Test Parameter Measurement Unit		Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result			
				Acceptable Limit	Permissible Limit "				
II Chemical Testing 2. Residues In Water									
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18			
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) ; 2019	0.05	1.5	BDL(DL-0.03)			
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)			
23	Mercury (as Hg)	mg/l	IS: 3025 (Part 48): 1994	0.001	No relaxation	BDL(DL-0.0005			
24	Cadmium (as Cd)	mg/l	IS: 3025 (Part 41): 1992	0.003	No relaxation	BDL(DL-0.001)			
25	Selenium (as Se)	mg/l	IS: 3025 (Part 56): 2003	0.01	No relaxation	BDL(DL-0.001)			
26	Arsenic (as As)	mg/l	1S: 3025 (Part 37): 1988	0.01	No relaxation	BDL(DL-0.01)			
27	Aluminium (as Al)	mg/l	18 15302 : 2003	0.03	0.2	BDL(DL-0.01)			
28	Lead (as Pb)	mg/l	1S 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)			
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)			
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)			
31	Boron (as B)	mg/l	1S 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)			
32	Polynuclear aromatic hydrocarbon (PAH)	μg/l	ANqr RES-30	0.1	No relaxation	BDL(DL+0.001)			
33	Mineral Oil	mg/l	ANgr RES-40	0.5	No relaxation	BDL(DL-0.03)			

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Verified By

Shashikant Satdeve Sr. Chemist

Sonall Gharpure **Technical Manager** 

Authorized Signatory Lawf

Dr. (Mrs.) S.D. Garway Quality Manager

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Manager Environment (Khondbond)



TEST REPORT

## ANAC NL

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 Bureau of India Standards (BIS) • Export Inspection council (EIC); ADMARK

Test Report No. : .	ALPL/31082021/1-2	20	dated 31/08/2021			Page 3 of 3	
Issued To : M/s Khondbond I		Sample Inward No.	2021/MON-100/60-9	,	Analysis Start	21/08/202	
		Inward Date	20/08/2021		Analysis End	28/08/2021	
Manganese Mine (M/s TATA Steel		Reference Reference Date	W.O 3000132460/5 15.05.2020	862	Report Issue Date Sample Category	31/08/2021 Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particular Sample Code-GW-9			Quantity R 2.0 Ltr & 2		
Sample Co Anacon Representative	000000000	Sampling Date 17/08/2021	Sampling 10.55 am to	THE STREET STREET	Sampling L Guruda Village		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TEST	RESULTS				

S.N.	Test Parameter	Test Parameter Measurement Unit	Test Method	IS 1050 (Drinking Wate		Test Result
			C. C. Standard	Acceptable Limit		
п	Chemical Testing 2. Residues In Water			Station &	192. 4.	
33	Pesticide Residues		and the second sec		The second	100
i	Alpha-HCH	μg/l	ANgr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	μg/l	ANgr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	μg/l	ANgr RES-28	0,04	No relaxation	BDL(DL-0.03)
iv	Alachlor	μ <u>g</u> /l	ANgr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	μg/1	ANgr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/I	ANgr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	μg/I	ANgr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/1	ANgr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'- DDT )	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
X	Gainma + HCH (Lindane)	μg/l	ANgr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANgr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endesulphan	μg/l	ANgr RES-28	0.4	No relaxation	BDL(DL-0.03)
XIII	Ethion	μg/Ι	ANgr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/I	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
SV	Matathion	μg/1	ANgr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	μg/l	ANgr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/1	ANgr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	μg/l	ANgr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS: 10500:2012, for tests conducted, indicating that it

-End of Report----

Verified By N Sonali Charpure Technical Ma

Authorized Signatory D'Gawf Dr. (Mrs.) S.D. Garway Quality Manager ANACOMLARS

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**TEST REPORT** 

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Fest Report No. : A Issued To : M/s Khondbond Manganese Mine (M/s TATA Steel	\$		dated 31/08/2021 2021/MON-100/60-10 20/08/2021 W.O 3000132460/962 15.05.2020	Analysis Start Analysis End Report Issue Date Sample Category	Page 1 of 3 21/08/2021 28/08/2021 31/08/2021 Water
Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received	
Ground Water	Borewell	Sample Code-GW-10	Sealed & Ice Preserved	2.0 Ltr & 250 ml	
Sample Collected By		Sampling Date	Sampling Time	Sampling Location	
Anacon Representative Mr. K. Pandey		17/08/2021	10.55 am to 5.15 pm	Gurada Village	

S.N.	Test Parameter	Measurement Unit	Test Method	Requirem 15 1050 (Drinking Wate Including Am	Test Result						
				Acceptable Limit	Permissible Limit "						
1	Biological Testing 1.Water										
1	Escherichia coli	Per 100 ml	IS 15185	Absent	Absent	Absent					
П	Chemical Testing 1.Water	Man and the second	a contract the second by	A PER CAN	A DECEMBER OF A	10-					
2	pH value	a state of the	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.41 at 25°C					
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.7					
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1					
5	Odour		1S 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable					
6	Tastc		IS 3025 (Part 8): 1984	Agreeable	Agreeable	Agreeable					
7	Free residual chlorine	mg/l	IS 3025 (Part 26): 1986	Min. 0.2	1	BDL(DL-0.1)					
8	Total dissolved solids	mg/l	1S 3025 (Part 16) : 1984	500	2000	202					
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)					
10	Cvanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.05	No relaxation	BDL(DL-0.005)					
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32):1988	250	1000	51.48					
12	Total Alkalinity (as CaCO3)	mg/l	15 3025 (Part 23) : 1986	200	600	110					
13	Total hardness (as CaCO <sub>3</sub> )	mg/]	IS 3025 (Part 21) : 2009	200	600	149.4					
14	Calcium (as Ca)	mg/i	1S 3025 (Part 40) : 1991	75	200	40.32					
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46): 1994	30	100	11.83					
16	Sulphate (as SO <sub>4</sub> )	mg/l	1S 3025 (Part 24) : 1986	200	400	13.48					
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23 <sup>rd</sup> Edition	45	No relaxation	9.56					
18	Phenolic compounds (as C <sub>6</sub> H <sub>4</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)					
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01)					

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Verified By Duakus

Roshani Thakur Sr. Chemist

Authorized Signatories

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al Manage

1 Dr. (Mrs.) S.D. Garway Quality Manager

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26

27

31

32

33

Arsenic (as As)

Lead (as Pb)

Mineral Oil

Aluminium (as Al)

 29
 Zinc (as Zn)

 30
 Total Chromium (as Cr)

Boron (as B) Polynuclear aromatic

hydrocarbon (PAH)

## ANAC NLAB

No relaxation BDL(DL-0.001)

BDL(DL-0.01)

BDL(DL-0.01)

BDL(DL-0.001)

BDL(DL-0.1)

BDL(DL-0.03)

BDL(DL-0.1)

BDL(DL-0.03)

BORATORIE

ANACONLABS

SIGINAL CO

No relaxation

0.2

No relaxation

15

No relaxation

2.4

No relaxation

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 Janual & Processed Food Products Export Development Authority (APEDA);

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	And a second second second second second second	: ALPL/31082021/1	the second s	A REAL PROPERTY AND INCOMENTAL OF	lated 31/08/20	and the second se		Page 2 of 3
Issued To : M/s Khondbond Iron & Manganese Mines (M/s TATA Steel Limited) Sample Name Ground Water Borewell		s Khondbond Iron & Inward Date 20/08/2021 nganese Mines Beference W. 0 - 3000132460/962		Analysis Start Analysis End Report Issue Date Sample Category	21/08/2021 28/08/2021 31/08/2021 Water			
			Sample Particulars Sample Condition Sample Code-GW-10 Scaled & Ice Preserved		Quantity Received 2.0 Ltr & 250 ml			
Sample Collected By Anacon Representative Mr. K. Pandey		and the second se	oling Date Sampling Time 08/2021 10.55 am to 5.15 pm		Sampling Location Guruda Village			
				TEST RE	SULTS	A Constant of the second	and the second second second	No. Marcometer
s.n.	Test Parameter		Measurement Unit	Test N	lethod	IS 10 (Drinking W	rement as per 0500 : 2012 ater Specifications) Amendment No. 2	Test Result
						Acceptable	Permissible Limit *	
п	Chemical Te 2. Residues				1			
20	Iron (as Fe)	1.00	mg/l	IS 3025 (Pa	art 2): 2019	1.0	No relaxation	0.27
21	Copper (as C	(u)	mg/l	IS 3025 (P)	art 2) : 2019	0.05	1.5	BDL(DL-0.03
22	Manganese (	as Mn)	mg/l	IS 3025 (P	art 2) : 2019	0.1	0.3	BDL(DL-0.05
	Mercury (as	He)	mg/l	IS: 3025 (Pi	art 48) ; 1994	0.001	No relaxation	BDL(DL-0.000
23	Statement of the Annual	1.101						
24	Cadmium (as	s Cd)	mg/l	1S: 3025 (Pi	art 41): 1992	0.003	No relaxation	BDL(DL-0.001
-	Contraction of the Contract	s Ĉd) ; Sc)		IS : 3025 (Pi	urt 41) : 1992 urt 56) : 2003	0.003	No relaxation No relaxation	

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IS: 3025 (Part 37): 1988

IS 15302 : 2003

IS 3025 (Part 47) : 2003

IS 3025 (Part 2) : 2019

IS 3025 (Part 2) : 2019

ANgr RES-30

ANgr RES-40

IS 3025 (Part 2): 2019

Verified By

Shashikant Satdeve Sr. Chemist

(

Sonali Gharpure Technical Manager

mg/l

mg/l

mg/l

mg/l

mg/l

mg/l

µg/1

mg/l

**Authorized Signatory** ) Gan P

0.01

0.03

0.01

0.05

0.5

0.1

0.5

Dr. (Mrs.) S.D. Garway Quality Manager

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**TEST REPORT** 

Test Report No. :	: ALPL/31082021/1	-21	dated 31/08/2021		Page 3 of 3
Issued To : M/s Khondbond I Manganese Mine (M/s TATA Steel	5	Inward Date Reference	2021/MON-100/60-10 20/08/2021 W.O 3000132460/962 15.05.2020	Analysis Start Analysis End Report Issue Date Sample Category	21/08/202 28/08/202 31/08/202 Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-10	Sample Condition Scaled & Ice Preserved	Quantity Ro 2.0 Ltr & 2	ALC DESCRIPTION OF
Sample Co Anacon Representa	10000 2000 1000	Sampling Date 17/08/2021	Sampling Time 10.55 am to 5.15 pm	Sampling Lo Guruda Vi	

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result	
				Acceptable	Permissible Limit *		
П	Chemical Testing 2. Residues In Water						
34	Pesticide Residues	VIII	The second s	Name of Contractor		1	
i.	Alpha-HCH	μg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)	
ii	Beta HCH	µg/l	ANgr RES-28	0.04	No relaxation	BDL(DL-0.03)	
iii	Delta- HCH	µg/l	ANgr RES-28	0.04	No relaxation	BDL(DL-0.03)	
iv	Alachlor	µg/l	ANgr RES-28	20	No relaxation	BDL(DL-0.03)	
V.	Aldrin / Dieldrin	µg/l	ANgr RES-28	0.03	No relaxation	BDL(DL-0.03)	
vi	Atrazine	µg/l	ANgr RES-29	2	No relaxation	BDL(DL-0.03)	
vii	Butachlor	μg/l	ANgr RES-29	125	No relaxation	BDL(DL-0.03)	
viii	Chlorpyrifos	µg/l	ANgr RES-28	30	No relaxation	BDL(DL-0.03)	
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'- DDT )	μg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)	
X	Gamma - HCH (Lindane)	µg/l	ANgr RES-28	2	No relaxation	BDL(DL-0.03)	
xi	2.4-Dichlorophenoxyacetic acid	µg/l	ANgr RES-29	30	No relaxation	BDL(DL-0.03)	
xii	Endosulphan	µg/l	ANgr RES-28	0.4	No relaxation	BDL(DL-0.03)	
xiii	Ethion	μg/l	ANgr RES-29	3	No relaxation	BDL(DL-0.03)	
Aiv	Isoproturon	µg/l	ANgr RES-29	9	No relaxation	BDL(DL-0.03)	
XV	Malathion	μg/l	ANgr RES-29	190	No relaxation	BDL(DL-0.03)	
xvi	Methyl Parathion	μg/l	ANgr RES-29	0.3	No relaxation	BDL(DL-0.03)	
xvii	Monocrotophos	μg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)	
xviii	Phorate	μg/l	ANgr RES-29	2	No relaxation	BDL(DL-0.03)	

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Non-perisbable and perisbable sample(s) and be disposed off after 30 days and 15 days respectively from the date of assate of Test Report, unless specified otherwise.
Instrument, BDL- Below detection limit 
DL- Indicates detection limit of instrument/method and shall be considered as "absent".
Anyr RES-28, 29, 36 & 40 s
Information and the second state of the second st

REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By Re Sonali Gharpure Technical Manager

-End of Report----

Authorized Signatory 2) Gawf

Dr. (Mrs.) S.D. Garway CRATCR Quality Manager

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Thanks for your faith and trust in our services. We at Anacon Laboratories cherish our relationship. We put in a lot of hard work to ensure that you have a seamless experience at every step of our relationship. In order to ensure that your next experience will be significantly better, we welcome your feedback over email on feedback@anacon.in.

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Manager Environment (Khondbond)



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TEST REPORT

#### ANAC ÌNL FOR BET TER EN ENT & HE

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 Bureau of India Standards (BIS) - Export Inspection council (EIC); AGMA . Ac

Requirement as per

Fest Report No. : A	LPL/31082021/1-2.	The Prophet of the Prophet of	dated 31/08/2021	and the second second	Page 1 of 3
Issued To :		Sample Inward No.	2021/MON-100/60-11	Analysis Start	21/08/2021
M/s Khondbond Iron &		Inward Date	20/08/2021	Analysis End	28/08/2021
Manganese Mine (M/s TATA Steel		Reference Reference Date	W.O 3000132460/962 15.05.2020	Report Issue Date Sample Category	31/08/2021 Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-11	Sample Condition Sealed & Ice Preserved	Quantity Received 2.0 Ltr & 250 mi	
Sample Co Anacon Representa		Sampling Date 17/08/2021	Sampling Time 10.55 am to 5.15 pm	Sampling I Khondbond Village (N	

#### TEST RESULTS

S.N.	Test Parameter	Measurement	Test Method	(Drinking Wate	0 : 2012 r Specifications) endment No. 2	Test Result
				Acceptable Limit	Permissible Limit "	AL SUM
1	Biological Testing 1.Water	We have been a second		C. V. C. C. Marcale	California - Theorem	ALC: NOW SHALL
1	Escherichia coll	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
п	Chemical Testing 1.Water	A State of the sta		7	ale and the	Store and a start of the
2	pH value	+	IS 3025 (Part 11) ; 1983	6.5 to 8.5	No relaxation	7,69 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1 10 mg	5	0.5
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour		1S 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste		IS 3025 (Part 8): 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26): 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	\$00	2000	234
9	Fluoride (as F)	mg/l	1S 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32):1988	250	1000	50.99
12	Total Alkalinity (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	116
13	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	172.8
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.12
15	Magnesium (as Mg)	mg/l	1S 3025 (Part 46) : 1994	30	100	10.96
16	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 1986	200	400	11.66
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	11.59
18	Phenolic compounds (as C <sub>4</sub> H <sub>2</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reportanced enough in full without prior writes approval of Anacos Labs. • Labsity of Ana

Verified By Plaker Roshani Thakur

Sr. Chemist

Authorized Signatories

Techr al M:

Sawf Dr. (Mrs.) S.D. Garway Quality Manager

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**TEST REPORT** 

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Issued To : M/s Khondbond Manganese Mine (M/s TATA Steel	5	Sample Inward No. Inward Date Reference Reference Date	2021/MON-100/60-12 20/08/2021 W.O 3000132460/962 15.05.2020	Analysis Start Analysis End Report Issue Date Sample Category	21/08/2021 28/08/2021 31/08/2021 Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-12		Quantity Re 2.0 Ltr & 2	
	ollected By ntive Mr. K. Pandey	Sampling Date 17/08/2021	Sampling Time 10.55 am to 5.15 pm	Sampling L OMC Co	

TEST RESULTS

S.N.	Test Parameter	Measurement	Test Method	IS 1050 (Drinking Wate	ent as per 0 : 2012 r Specifications) endment No. 2	Test Result
				Acceptable Limit	Permissible Limit "	
1	Biological Testing 1.Water			Sale Contra	A A MISS	3
1	Escherichia coli	Per 100 ml	IS 15185	Absent	Absent	Absent
П	Chemical Testing 1.Water	The substances of the		diella se		
2	pH value	States - States	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.62 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.5
4	Colour	Hazen units	IS 3025 (Part 4): 1983	5	15	1
5	Odour	200-	1S 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	2	1S 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26): 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	222
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)
10	Cvanide (as CN)	mg/1	IS 3025 (Part 27): 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	ing/l	1S 3025 (Part 32):1988	250	1000	49,54
12	Total Alkalinity (as CaCO <sub>1</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	124
13	Total hardness (as CaCO <sub>3</sub> )	.mg/l	IS 3025 (Part 21) : 2009	200	600	147.6
14	Calcium (as Ca)	mg/l	1S 3025 (Part 40) : 1991	75	200	41.76
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	10.52
16	Sulphate (as SO4)	mg/l	15 3025 (Part 24) : 1986	200	400	13,48
17	Nitrate (as NO <sub>1</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	11.32
18	Phenolic compounds (as C <sub>8</sub> H <sub>3</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001
19	Anionic detergents (as MBAS)	mg/l	1S 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01)

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Verified By fliaking

Roshani Thakur Sr. Chemist

**Authorized Signatories** 

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Dr. (Mrs.) S.D. Garway Quality Manager

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#### **TEST REPORT**

Test Report No. : /	ALPL/31082021/1-3	22	dated 31/08/2021		Page 3 of 3
Issued To ; M/s Khondbond I Manganese Mines (M/s TATA Steel		Inward Date 2 Reference V	021/MON-100/60-11 0/08/2021 V.O 3000132460/962 5.05.2020	Analysis Start Analysis End Report Issue Date Sample Category	21/08/2021 28/08/2021 31/08/2021 Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-11	Sample Condition Scaled & Ice Preserved	Quantity R 2.0 Ltr &	
Sample Co Anacon Representa	10.000000000000000000000000000000000000	Sampling Date 17/08/2021	Sampling Time 10.55 am to 5.15 pm	Sampling 1 Khondbond Village (M	

S.N.	Test Parameter	Measurement Unit	Test Method	IS 1050 (Drinking Wate	ent as per 0 : 2012 r Specifications) endment No. 2	Test Result
-				Acceptable Limit	Permissible Limit "	
п	Chemical Testing 2. Residues In Water					
33	Pesticide Residues			C THE SECOND		
1	Alpha-HCH	μg/1	ANgr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
ili	Delta- HCH	µg/1	ANgr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANgr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	μg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/I	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	μg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chiorpyrifos	μg/l	ANgr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD, o,p'-DDD o,p'- DDT, p,p'- DDT )	µgЛ	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANgr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2.4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	μg/l	ANgr RES-28	0.4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/1	ANgr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
XV	Malathion	µg/1	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	μg/l	ANgr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	μg/l	ANgr RES-29	I	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/i	ANgr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it

Verified By \$6 Sonali Gharpure Technical Manager

Authorized Signatory

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Dr. (Mrs.) S.D. Garway Quality Manager GRATOA

ANACONLASS

----End of Report-----

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Manager Environment (Khondbond)



TEST REPORT

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Test	Report No. : /	ALPL/31082021/1-	22	1	dated 31/08/2	021		Page 2 of 3	
M/s   Man	ed To : Khondbond I ganese Mines TATA Steel		Sample Inward Inward Date Reference Reference Date	20 W	021/MON-100/6 0/08/2021 V.O 300013246 5.05.2020	Sub- off	Analysis Start Analysis End Report Issue Date Sample Category	21/08/2021 28/08/2021 31/08/2021 Water	
	mple Name ound Water	Sample Source Dugwell	Sample Pa Sample Cod		10012 J 200 100 100 100 100 100 100 100 100 100	Condition ce Preserved	Quantity F 2.0 Lir &		
An	Sample Co acon Representat	llected By ive Mr. K. Pandey	Sampling 17/08/2	Contraction of the second		ng Time to 5.15 pm	Sampling I Khondbond Village (N		
				TEST R	ESULTS	Mar Sold		2	
S.N.	Test	Parameter	Measurement Unit	Test	Method	IS (Drinking	airement as per 10500 : 2012 Water Specifications) g Amendment No. 2	Test Result	
						Accepta			
п	Chemical Tes 2. Residues					A STREET		Section Section	
20	Iron (as Fe)	1.00°	mg/l	IS 3025 (I	Part 2) : 2019	1.0	No relaxation	0.18	
21	Copper (as C	u)	mg/l	IS 3025 (	Part 2) : 2019	0.05	1.5	BDL(DL-0.03)	
22	Manganese (a	is Mn)	mg/l	IS 3025 (	Part 2): 2019	0.1	0.3	BDL(DL-0.05)	

20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS: 3025 (Part 48): 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cudmium (as Cd)	mg/l	IS: 3025 (Part 41): 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS: 3025 (Part 56): 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS: 3025 (Part 37): 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Za)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL+0,1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDI.(DI0.001)
33	Mineral Oil	mg/l	ANgr RES-40	0.5	No relaxation	BDL(DL-0.03)

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Verified By 358 shikant Satdeve Sr. Chemist

R Sonali Gharpure **Technical Manager** 

Authorized Signatory Dawl Dr. (Mrs.) S.D. Garway

Quality Manager

ANACONLAS

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Interer a

Manager Environment (Khondbond)



**TEST REPORT** 



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 Bureau of India Standards (BIS) + Export Inspection council (EIC); AGMARK.

dated 31/08/2021 Page 7 of 1.

23	dated 31/08/2021	Page 2 of 3	
Sample Ioward No. Inward Date Reference Reference Date	2021/MON-100/60-12 20/08/2021 W.O 3000132460/962 15:05:2020	Analysis Start 21/08 Analysis End 28/09 Report Issue Date 31/08 Sample Category Wate	
1 Contraction of Contraction (Contraction)			
Sampling Date 17/08/2021	Sampling Time 10.55 am to 5.15 pm	Sampling I OMC C	
	Sample Iaward No. Inward Date Reference Reference Date Sample Particular Sample Code-GW-1 Sampling Date	Sample Inward No.         2021/MON-100/60-12           Inward Date         20/08/2021           Reference         W.O 3000132460/962           Reference Date         15.05.2020           Sample Particulars Sample Code-GW-12         Sample Condition Sealed & Ice Preserved           Sampling Date         Sampling Time	Sample Inward No.         2021/MON-100/60-12         Analysis Start           Inward Date         20/08/2021         Analysis End           Reference         W.O 3000132460/962         Report Issue Date           Reference Date         15,05.2020         Sample Category           Sample Particulars         Sample Code-GW-12         Sealed & Ice Preserved         2.0 Lir &           Sampling Date         Sampling Time         Sampling I

S.N.	Test Parameter	Measurement Unit	Tart Mathod		0 : 2012 r Specifications)	Test Result
				Acceptable Limit	Permissible Limit "	and the second
11	Chemical Testing 2. Residues In Water					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.24
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0,3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS: 3025 (Part 48): 1994	0.001	No relaxation	BDL(DL-0.0005
24	Cadmium (as Cd)	mg/l	IS: 3025 (Part 41): 1992	0.003	No relaxation	BDL(DL-0.001
25	Scienium (as Se)	mg/l	IS: 3025 (Part 56): 2003	0.01	No relaxation	BDL(DL-0.001
26	Arsenic (as As)	mg/l	IS: 3025 (Part 37): 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/I	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zine (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANgr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By (He 25 Sonali Gharpure Shashikant Satdeve Sr. Chemist Technical Manager

Authorized Signatory ρ Dean

Dr. (Mrs.) S.D. Garway Quality Manager

ABORATORIE

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**TEST REPORT** 

and as introduced in	Report No. : ALPL/31082021/1-2 d To :	Sample Inward No		ted 31/08/20	NAMES OF TAXABLE PARTY OF TAXABLE PARTY.	Analysis Start	Page 3 of 3 21/08/2021
M/s F Mang	Khondbond Iron & ganese Mines	Inward Date Reference	20/0	08/2021 0 30001324		Analysis Start Analysis End Report Issue Date	28/08/2021 31/08/2021
(M/s	TATA Steel Limited)	Reference Date	15.0	15,2020		Sample Category	Water
	und Water Sample Source Dugweil	Sample Partic Sample Code-G			e Condition Ice Preserved	Quantity R 2.0 Ltr &	
An	Sample Collected By acon Representative Mr. K. Pandey	Sampling D 17/08/202			n to 5.15 pm	Sampling I OMC Co	
	Martin Contractor and a second second	and the second second	TEST RE	SULTS		al est la section de la se	and the second second
s.n.	Test Parameter	Measurement Unit	Test !	Method	IS 1 (Drinking W	rement as per 0500 : 2012 /ater Specifications) Amendment No. 2	Test Result
aut		the line			Acceptable	Permissible Limit "	
	Chemical Testing 2. Residues In Water			A Start	and the second second		
34	Pesticide Residues		E RUNE	All of the			
1	Alpha-HCH	µg/1	ANqr	RES-28	0.01	No relaxation	BDL(DL-0.01
ii	Beta HCH	µg/l	ANgr	RES-28	0.04	No relaxation	BDL(DL-0.03
iii	Delta- HCH	µg/l	ANgr	RES-28	0.04	No relaxation	BDL(DL-0.03
iv	Alachlor	μg/1	ANgr	RES-28	20	No relaxation	BDL(DL-0.03
V	Aldrin / Dieldrin	µg/l	ANgr	RES-28	0.03	No relaxation	BDL(DL-0.03
vi	Atrazine	μg/l	ANgr	RES-29	2	No relaxation	BDL(DL-0.03
vii	Butachlor	µg/l	ANgr	RES-29	125	No relaxation	BDL(DL-0.03
viii	Chlorpyrifos	μg/l	ANgr	RES-28	30	No relaxation	BDL(DL-0.03
ix	DDT (p,p'-DDE, o,p'-DDE, p,p'-DDD o,p'-DDD o,p'- DDT, p,p'- DDT )	μg/l	ANqr	RES-28	1	No relaxation	BDL(DL-0.03
x	Gamma - HCH (Lindane)	µg/1	ANgr	RES-28	2	No relaxation	BDL(DL-0.03
xi	2.4-Dichlorophenoxyacetic acid	µg/1		RES-29	30	No relaxation	BDL(DL+0.03
xii	Endosulphan	μg/1		RES-28	0.4	No relaxation	BDL(DL-0.03
xiii	Ethion	μg/1	ANgr	RES-29	3	No relaxation	BDL(DL-0.03
xiv	Isoproturon	μg/l	ANgr	RES-29	9	No relaxation	BDL(DL-0.03
XV	Maiathion	µg/l	ANgr	RES-29	190	No relaxation	BDL(DL-0.03
xvi	Methyl Parathion	µg/1	ANgr	RES-29	0.3	No relaxation	BDL(DL-0.03
xvii	Monocrotophos	µg/1	ANgr	RES-29	1	No relaxation	BDL(DL-0.03
xviii	Phorate	µg/l	ANgr	RES-29	2	No relaxation	BDL(DL-0.03

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REMARKS : As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

----End of Report---

Verified By Sonali Gharpure Technical Manager

Authorized Signatory Gaw 1 Dr. (Mrs.) S.D. Garway Quality Manager ANACOMLAB

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 Bureau of India Standards (BIS) • Expant inspection council (EIC); AGMARK.

Issued To :		Sample Inward No.	2021/MON-54/60-8	Analysis Start	20/05/2021
M/s Khondbond l	Iron &	Inward Date	19/05/2021	Analysis End	26/05/2021
Manganese Mine (M/s TATA Steel		Reference Reference Date	W.O. 3000132460/962 15.05.2020	Sample Category	Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particula Sample Code-GW		Quantity R 2.0 Ltr & 3	
and the second states of the s	ollected By e Mr. Siddhartha Patra	Sampling Date 14/05/2021	Sampling Time 10.45 am to 5.30 pm	- Sampling L Ganua Village (Mr	

#### TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirem IS 10500 (Drinking Water Including Amo	) : 2012 Specifications)	Test Result
				Acceptable Limit	Permissible Limit <sup>#</sup>	5
I	<b>Biological Testing</b> 1.Water	1				
1	Escherichia coli	Per 100 ml	IS 15185	Absent	Absent	Absent
п	Chemical Testing 1.Water	ALC: NOT OF THE OWNER OF THE OWNE				
2	pII value		IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.40 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.7
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour		IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste		IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	214
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)
10	Cyanide (as CN)	mg/l -	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	40.79
12	Total Alkalinity (as CaCO3)	mg/l	IS 3025 (Part 23) : 1986	200	600	112
13	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	150.48
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	. 75	200	38.8
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.28
16	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 1986	200	400	15.55
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	7.35
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01)

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perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise.
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Verified By

Ewel 5

Swati Shrivastava Technical Manager

Paoja Kathahe Technical Manager

Authorized Signatories

Jans Dr. (Mrs.) S.D. Garway

Quality Manager

ANAC JNLAS

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Test Report No. : Al	PL/31032021/2-8	• dated	1 31/03/2021		Page 1 of 3
Issued To : M/s Khondbond Iro Manganese Mines (M/s TATA Steel L	on &	Sample Inward No. Inward Date Reference Reference Date	2021/MON-36/24-1 25/03/2021 W.O 3000132460 15 05 2020	Analysis Start Analysis End Sample Category	25/03/2021 30/03/2021 Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code DW 1	Sample C Sealed & Ic	Quantity R 2.0 Ltr & 2	
Sample Col Anacon Representative		Sampling Date 20/03/2021	Samplin 10.50	Sampling L WTP It	

#### TEST RESULTS

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•S.N.	Test Parameter	Measurement Unit	Test Method	. Requirem IS 1050 (Drinking Wate Including Am	0 : 2012 r Specifications) endment No. 2	Test Result
				Acceptable Limit	Permissible Limit "	interest interest.
I	Biological Testing 1.Water	(burd)				
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
П	Chemical Testing 1.Water	Carlos and		the second second		
2	pH value		1\$ 3025 (Part 11) . 1983	6.5 to 8.5	No relaxation	7.71 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	· 1	5	0.8
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	220
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	· 1.0 · ·	1.5	BDL(DL-0.1)
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	35.94
12	Total Alkalinity (as CaCO3)	· mg/l	IS 3025 (Part 23) : 1986	200	600	60
13	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	· 200	600	100.98
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	24.83
. 15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	8.98
16	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 1986	200	400	24.62
17	Nitrate (as NO <sub>3</sub> )	mg/l	APHA Method 23rd Edition	45	No relaxation	BDL(DL-2)
18	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL-0.01

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Pooj

Verified By

Liebo Swati Shrivastava Technical Manager

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Authorized Signatories

Kathane Technical Manager

Chinnay Garway Deputy Quality Manager

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a vova

Manager Environment (Khondbond)

### **Surface Water Analysis Report** (April 2021 – September 2021) Khondbond Iron & Manganese Mine



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 Export inspection council (EIC); AGMARK.

**TEST REPORT** 

Issue M/s I Man (M/s	Report No. : ALPL/26052021/ 2 ed To : Khondbond Iron & ganese Mines TATA Steel Limited)	Samp Inwa Refer	le Inward rd Date	19/0: W.O	/MON-54/60-3 5/2021 - 3000132460 5.2020		Page 1 of 1 Analysis Start Analysis End Sample Categor	20/05/2021 26/05/2021 y Water
	Sample Name San Surface Water 1. Upstream	ple Sour 2. Dow		12,402,000,000,000	Particulars de-SW-1 & 2		Condition ce Preserved	Quantity Received 2.0 Ltr & 250 ml
Anac	Sample Collected By con Representative Mr. Siddhartha	Patra	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	ing Date 5/2021	Sampling 3.10 p	10.000		Location pstream (SW-1) lownstream (SW-2)
1				TEST RES	ULTS			
S.N.	Test Parameter		irement nít	Test Me	thod	Standards as per IS 2296:1992 Class C	Te SW-1	st Result SW-2
1	Biological Testing 1.Water Total Coliform	MPN	/100ml	IS 1622	- 1981	5000	<2	<2
11	Chemical Testing 1.Water	1		101000	11201	5000	~2	~2
2	pH value	1	-	IS 3025 (Part	111.1983	6.0 to 9.0	7.87 at 25°C	7.80 at 25°C
3	Colour	Haze	n units	1S 3025 (Par		300	1.07 at 25 C	7.80 at 25 C
4	Dissolved Oxygen		ig/l	IS 3025 (Par		4.0	6.2	6.0
5	Total Suspended Solid (as TSS)			IS 3025 (Part		4.5	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)		ng/l	IS 3025 (Part		3.0	BDL(DL-2)	BDL(DL-2)
7	Chemical oxygen demand			IS 3025 (Part		5.0	BDL(DL-4)	BDL(DL-2) BDL(DL-4)
8	Total Dissolved Solids (TDS)	III	ig/l	IS 3025 (Part		1500	228	230
9	Copper (as Cu)		ng/l	IS 3025 (Par		1.5	BDL(DL-0.03)	
10	Chloride (as Cl)		ig/l	IS 3025 (Part		600	61.19	58.28
11	Sulphate (as SO <sub>4</sub> )		ig/l	1S 3025 (Part		400	12.69	8.55
12	Nitrate (as NO3)			IS 3025 (Par		50	12.52	9.49
13	Fluoride (as F)		ig/l	IS 3025 (Part		1.5	BDL(DL-0.1)	BDL(DL-0.1
14	Cyanide (as CN)		ig/l	IS 3025 (Part		0.05	BDL(DL-0.005	
15	Phenolic compounds (as C6H5OH)		ng/l	1S 3025 (Part		0.005	BDL(DL-0.001	
16	Anionic Detergent	п	ig/l	IS 13428 : 20	05 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01
	Chemical Testing 2. Residue					***	000000000000000000000000000000000000000	0.01
17	Iron (as Fe)		ng/l	IS 3025 (Par	t 2): 2019	• 0.5	0.14	0.18
18	Cadmium (as Cd)	n	ig/l	IS 3025 (Part		0.01	BDL(DL-0.001	
19	Selenium (as Se) .	n	ng/l	IS 3025 (Par		0.05	BDL(DL-0.001	
20	Arsenic (as As)	-	ıg/l	IS 3025 (Par		0.2	BDL(DL-0.01)	
21	Lead (as Pb)	π	ng/l	IS 3025 (Par		0.1	BDL(DL-0.001	
22	Zinc (as Zn)		ng/l	IS 3025 (Par		15	BDL(DL-0.1)	BDL(DL-0.1
23	Hexa Chromium (as Cr <sup>+6</sup> )	IT	1g/1	IS 3025 (Par		0.05	BDL(DL-0.03)	
24	Mercury (as Hg)			IS : 3025 (Par			BDL(DL-0.000	
25	Manganese (as Mn)		ng/l	IS 3025 (Par			BDL(DL-0.05)	BDL(DL-0.05

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Cost & Verified By

Authorized Signatories

Diaw

Dr. (Mrs.) S.D. Garway

Quality Manager ALABS

Rup

Swati Shrivastava Shashikant Satdeve Pooja Kathane Technical Manager Sr. Chemist Technical Manager

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.

Email : support@anacon.in; Please Visit us at : www.anaconlaboratories.com

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#### ACT FOR BETTER ENVIRONMENT & HEALTH MAG

#### ANACON LABORATORIES PVT. LTD.

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 Recognized By Ministry of Environment & Forests (MoEF), New Delhi
 Approved by : Food Safety & Standards Authority of India under FSS Act;
 Bureau of Indian Standards (BiS); Agricultural & Processed Food Products Export Development Authority (APEDA);
 Export inspection council (EIC); AGMARK.

#### **TEST REPORT**

Issue M/s H Mang (M/s	Report No. : ALPL/26052021/ d To : Khondbond Iron & ganese Mines TATA Steel Limited)	Sam Inw Refe Refe	ple Inwar ard Date erence erence Dat	19/0 W.C	1/MON-54/60- 5/2021 0 300013246 5.2020			Page 1 of Analysis Star Analysis End Sample Categ	t	20/05/2021 26/05/2021 Water
	ample Name Sa Surface Water 1. Upstream	mple Sou n 2. Do		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Particulars ode-SW-1 & 2			Condition ce Preserved		antity Received
Anac	Sample Collected By on Representative Mr. Siddharth	a Patra	- 1961-197	pling Date /05/2021	Sampling 3.10	g Time		Samplin 1. Sona Rive	ng Lo r Upsi	
				TEST RES	SULTS		-	a. Dona rerve	DUN	insu catti (5 11-2)
	2		Carrierania			Standar	ds as '		Test F	Result
S.N.	Test Parameter	1122000000	urement Unit	Test M	ethod	per I 2296:19 Class	992	SW-1		SW-2
1	Biological Testing 1.Water Total Coliform	1 MP	N/100m1	IS 1622	- 1091	5000		<2		
11	Chemical Testing 1.Water	1	to room	15 1022	. 1701	5000	,	~2		<2
2	pH value	1	4	IS 3025 (Par	+111-1983	6.0 to	0.0	7.87 at 25%	0	7.80 at 25°C
3	Colour	Haz	en units	1S 3025 (Pa		300		1.07 at 25 0	<u> </u>	7.80 at 25 C
4	Dissolved Oxygen		mg/l	IS 3025 (Pa		4.0		6.2	_	6,0
5	Total Suspended Solid (as TSS		mg/1-	IS 3025 (Par		4.5	-	BDL(DL-10	n (	BDL(DL-10
6	BOD (3 days at 27°C)		mg/l	1S 3025 (Par		3.0		BDL(DL-2		BDL(DL-2)
7	Chemical oxygen demand		mg/l	IS 3025 (Part				BDL(DL-4		BDL(DL-2) BDL(DL-4)
8	Total Dissolved Solids (TDS)		mg/l	IS 3025 (Par		1500	)	228	-	230
9	Copper (as Cu)		mg/l	IS 3025 (Pa		1.5		BDL(DL-0.0	131	BDL(DL-0.03
10	Chloride (as Cl)		mg/l	IS 3025 (Par		600	0	61.19	97	58.28
11	Sulphate (as SO <sub>4</sub> )		mg/l	IS 3025 (Par		400		12.69		8.55
12	Nitrate (as NO3)	1	mg/l	IS 3025 (Par		50	-	12.52		9.49
13	Fluoride (as F)	1 1	mg/l	IS 3025 (Par		1.5		BDL(DL-0.	1)	BDL(DL-0.1
14	Cyanide (as CN)	1	mg/l	IS 3025 (Par		0.05	1	BDL(DL-0.0		BDL(DL-0.00
15	Phenolic compounds (as C6H5OH)		mg/l	1S 3025 (Par	1 43) :1001	0.00	1	BDL(DL-0.0		BDL(DL-0.00
16	Anionic Detergent		mg/l	IS 13428 : 20	05 Annex K	1.0	-	BDL(DL-0.0	01)	BDL(DL-0.01
	Chemical Testing 2. Resid	ues In W	ater					Second sections		5000000000
17	Iron (as Fe)	1	mg/l	IS 3025 (Pa	rt 2): 2019	0.5		0.14		0.18
18	Cadmium (as Cd)	1	mg/l	IS 3025 (Par		0.01	9	BDL(DL-0.0	01)	BDL(DL-0.00
19	Selenium (as Se) .		mg/l	IS 3025 (Pa		0.05		BDL(DL-0.0		BDL(DL-0.00
20	Arsenic (as As)		mg/l	IS 3025 (Par		0.2		BDL(DL-0.0		BDL(DL-0.00
21	Lead (as Pb)		mg/l	IS 3025 (Par	t 47) : 2003	0.1		BDL(DL-0.0		BDL(DL-0.00
22	Zinc (as Zn)	L l à	mg/l	IS 3025 (Pa		15		BDL(DL-0.		BDL(DL-0.1
23	Hexa Chromium (as Cr <sup>+6</sup> )		mg/l	IS 3025 (Pa		0.05	5	BDL(DL-0.0		BDL(DL-0.03
24	Mercury (as Hg)	1 L d	mg/l	1S: 3025 (Pa	rt 48) : 1994			BDL(DL-0.00		BDL(DL-0.000
25	Manganese (as Mn)		mg/l	IS 3025 (Pa	rt 2): 2019			BDL(DL-0.0		BDL(DL-0.05

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • Liability of Anacon Labs is limited to invoiced amount only. • Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. • 'mg/l' is equivalent to 'ppm'. • BDL-Below detection limit • DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. REMARKS : As requested by the client, sample was tested for above parameters only.

ad By Verified By Authorized Signatories Just Rup P Duan Shashikant Satdeve Swati Shriyastaya Pooja Kathane Dr. (Mrs.) S.D. Garway Technical Manager 6. Sr. Chemist Technical Manager Quality Manager MLABS Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122. Email : support@anacon.in; Please Visit us at : www.anaconlaboratories.com Thanks for your faith and trust in our services. We at Anacon Laboratories cherish our relationship. We put in a lot of hard work to ensure that you have a seamless experience at every step of our relationship. In order to ensure that your next experience will be significantly better, we welcome your feedback over email on feedback@anacon.in.

Annexure-II

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Manager Environment (Khondbond)

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## **Digital Processing of Lease Area**

Land use & Land Cover of Khondbond Iron and Mn Mine Tata Steel ltd.



Mine Lease (Core Zone)



Manager Environment (Khondbond)

#### Annexure-II

#### Mine Lease (Buffer Zone)



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Manager Environment (Khondbond)

#### Annexure-III

												<u> </u>								
		Ne	ar Hel	ipad		I	Near Ma	angane	ese Mir	ne		N	lear 16	-D			Near Se	ecurit	y Barra	ck
Month	PM10	PM2.5	\$O <sub>2</sub>	NOX	со	PM10	PM2.5	SO2	NOX	со	PM10	PM2.5	SO2	NOX	со	PM10	PM2.5	SO2	NOX	со
Apr 21	60.5	21.3	9.2	18.1	0.281	64.7	23.8	10.0	19.0	0.290	62.8	22.0	10.3	19.1	0.309	60.7	20.4	8.5	17.7	0.295
May21	57.5	22.3	8.3	19.0	0.280	59.4	21.9	9.6	19.1	0.299	58.2	21.6	9.0	17.7	0.288	51.3	17.6	6.9	16.7	0.277
Jun 21	52.4	21.0	8.4	15.7	0.223	55.0	23.3	7.7	15.6	0.262	51.3	24.0	8.3	15.7	0.221	50.0	19.4	8.5	16.2	0.211
Jul 21	49.3	17.0	6.9	14.7	0.191	51.4	19.2	6.9	15.6	0.213	50.4	20.7	7.1	15.1	0.215	49.5	17.4	8.5	16.3	0.202
Aug 21	50.0	17.7	7.6	17.8	0.190	49.5	18.3	8.0	17.8	0.197	51.5	19.6	7.6	17.0	0.230	52.7	19.2	8.0	18.0	0.213
Sep 21	49.7	17.6	7.4	16.7	0.196	50.3	18.1	7.6	17.2	0.191	51.8	18.6	8.1	18.3	0.213	55.0	19.6	7.9	18.8	0.219

#### Khondbond Iron & Manganese Mine Average Air Quality Report (Core Zone)

						A۱	/ERAG	E AI	R QU/	ALITY	REPO	RT (B	JFFE	R ZO	NE)					
Month		ŀ	(atesał	ni			Ch	orma	da			Guru	ıda Vi	llage			Khon	dbond	l village	2
Wonth	PM10	PM2.5	SO2	NOX	со	PM10	PM2.5	SO <sub>2</sub>	NOX	со	PM10	PM2.5	SO2	NOX	со	PM10	PM <sub>2.5</sub>	SO <sub>2</sub>	NOx	со
Apr 21	58.8	19.5	7.8	10.0	0.192	56.6	17.4	7.1	9.5	0.218	55.5	20.0	7.0	8.7	0.228	58.9	25.5	8.9	10.4	0.239
May21	50.7	15.8	6.1	7.4	0.159	51.0	16.8	7.0	8.2	0.196	51.1	15.8	6.3	8.0	0.205	55.0	21.5	7.7	8.9	0.235
Jun 21	50.4	14.3	5.5	6.3	0.17	53.3	17.6	7.3	8.7	0.205	50.9	16.1	6.7	8.8	0.213	53.2	20.0	7.0	8.1	0.218
Jul 21	47.7	12.8	5.9	6.8	0.158	50.0	14.4	7.3	8.7	0.195	48.9	14.9	6.1	7.9	0.196	50.1	16.9	6.3	7.1	0.205
Aug 21	52.7	15.4	6.1	8.7	0.177	49.5	17.2	8.0	9.1	0.169	50.6	16.3	5.7	7.4	0.176	50.2	17.1	6.1	7.3	0.170
Sep 21	49.6	16.3	6.5	8.9	0.169	53.8	18.0	7.8	10.3	0.179	49.5	15.5	6.0	7.7	0.171	54.6	20.2	7.7	12.0	0.199

Unit of measurement for all parameters except CO is  $\mu g/m^3.$  Co is in  $mg/m^3$ 

Interiora

Manager Environment (Khondbond)

#### **Analysis Report – Mineral Composition**



- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified
   Recognized By Ministry of Environment & Forests (MoEF), New Delhi
   Approved by : Food Safety & Standards Authority of India under FSS Act;
   Bureau of Indian Standards (BIS); Agricultural & Processed Food Products Export Development Authority (APEDA);
   Export inspection council (EIC); AGMARK.

**TEST REPORT** 

#### Mineralogical Composition Report-September-2021

Report No.: AN/MC/TS-KIM	M/2021/2-15			D	ate: 30/09/2021
Name and Address of	M/s Khondbond Ire	n & Manganaga	Tines	1	W. O. No.
Industry:-		Steel Limited)	vines	3	000132460/962 15.05.2020
Sample Description/Type	Mineralogical Composition	Sample Ref. No	D.:-	2021/M	on-245/KIMM/MC-1
Sample Drawn By:-	Anacon Representativ	ve Sample Inward	l Date:-		21/09/2021
Test Started On:-	22/09/2021	Test Completed	d On:-		24/09/2021
Date of sampling	Location	Parameter	U	nit	Result
		Silica	, c	16	0.47
		FeO	C	%	0.26
17/09/2021	Near Mines Area	CaO	0	%	0.031

P<sub>2</sub>O<sub>5</sub> % BDL (DL-0.01) NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. 
BDL- Below detection limit 
DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

Al<sub>2</sub>O<sub>3</sub>

Verified by

N M Shashikant Satdeve

(Sr. Chemist)

Authorized Signatory

BDL (DL-0.01)

%

/ Gawl

Dr. (Mrs.) S.D. Garway (Quality Manager)

-----End of Report-----



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Manager Environment (Khondbond)



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Approved by : Food Safety & Standards Authonity of India under FSS Act;
Bureau of Indian Standards (BIS); Agricultural & Processed Food Products Export Development Authority (APEDA);
Export Inspection council (EIC); AGMARK.

TEST REPORT

eport No.: AN/MC/TS-KIN	/M/2021/5-1			D	ate: 30/06/2021
ame and Address of adustry:-	M/s Khondbond Iro (M/s TATA	n & Manganese I Steel Limited)	Mines	3	W. O. No. 000132460/962 15.05.2020
ample Description/Type	Mineralogical Composition	Sample Ref. N	0.:-	2021/M	on-148/KIMM/MC-
ample Drawn By:-	Anacon Representativ	e Sample Inward	d Date:-		21/06/2021
est Started On:-	21/06/2021	Test Complete	d On:-		23/06/2021
Date of sampling	Location	Parameter	U	nit	Result
		Silica	9	6	0.53
		FeO	9	6	0.29
18/06/2021	Near Mines Area	CaO	9	6	0.024
		Al <sub>2</sub> O <sub>3</sub>	9	6	< 0.01
	and the second	P2O5	9	6	< 0.01
Thanks for utilizin	For ANACON LAR	BORATORIES PV1	Au		Signatory
	- I leine		<	Ja	we
Shashikant	Satdeve				.D. Garway
(Sr. Cher	nist)		(	Quality 1	Manager)

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Manager Environment (Khondbond)

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Sl. No.	Activity	Amount Lakhs (/-)	Recurring/Capital
1	Maintenance & Operation Sewage Treatment Plant	12.30	Recurring
2	CAAQMS AMC	3.3	Recurring
3	Expenses in Dry Fog system operation and maintenance in plant (AMC)	7	Recurring
4	Spares for maintaining DFS	10	Recurring
5	Operation and maintenance of mobile water sprinkler	85	Recurring
6	Operation & Maintenance of wet Drill	15	Recurring
7	Construction of toe wall & garland drain with sausage net	93.20	Recurring
8	Lease Line Maintenance	55.40	Recurring
9	Maintenance of despatch roads	15	Recurring
10	Construction of settling pit	43	Recurring
11	Maintenance of oil separation pit	1	Recurring
12	Water Flow meters installations	2	Recurring
13	Coir matting of fine stocks	30	Recurring
14	Awareness Programme	10	Recurring
15	Ground vibration study and Rock fragmentation	16	Recurring
16	Blasting technology with electronic detonators	75	Recurring
17	Maintenance of parks and nursery	8	Recurring
18	CTO Fees	32	Recurring
19	Environmental Monitoring	8	Recurring
20	Hydrogeology Study	5	Recurring
21	Display Board AMC	10	Recurring
22	Plantation	32.60	Recurring
	Total	568.8	

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Manager Environment (Khondbond)

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#### Annexure-V

#### AMBIENT NOISE QUALITY AT KHONDBOND AVERAGE OCTOBER 2020 TO SEPTEMBER 2021

	Location	Day Time 8.00 am to 10.00 pm	Limits in dB(A) Leq	Night Time 8.00 am to 10.00 pm	Limits in dB(A) Leq
	Hospital Premises	47.50	55.00	37.70	45.00
Residential	Training Centre	53.30		42.48	
area	Township	53.07		43.30	
	Admin Office	62.52		52.37	
Industrial	Mining area	62.97	75.00	54.82	. 70.00
area	Plant area	67.15		54.43	

Interestal

Manager Environment (Khondbond)

60